AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF PAGES
N/A	1	80

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0006	17 JUN 02	N/A	SPEC. NO. 1182

6. ISSUED BY CODE

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

7. ADMINISTERED BY *(If other than Item 6)* CODE

DISTRICT ENGINEER
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922
ATTN: CONTRACTING DIVISION

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE FACILITY CODE

(√) X

9A. AMENDMENT OF SOLICITATION NO.
DACW05-02-B-0005

9B. DATED *(SEE ITEM 11)*
02 MAY 16

10A. MODIFICATION OF CONTRACTS/ORDER NO.
N/A

10B. DATED *(SEE ITEM 13)*
N/A

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

GUADALUPE RIVER PROJECT, CONSTRUCTION CONTRACT 3A, PHASE 1
SAN JOSE, CALIFORNIA

3 ENCLS

1) REVISIONS: 01050 (4 PAGES), 02151 (12 PAGES), 02517 (6 PAGES), 02525 (4 PAGES), 03200 (5 PAGES) AND 03300 (16 PAGES).

2) DRAWING SHETTS C03, C10, C15, C50, C51, D2, D3, D4, D5, S19 AND S60.

3) WAGE RATE CA 020029 MOD 10, REPLACES EXISTING WAGE RATE IN ITS ENTIRETY.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY *(Signature of Contracting Officer)*	16C. DATE SIGNED

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SECTION 01050

LAYOUT AND SURVEYING

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SECTION 01050

LAYOUT AND SURVEYING

PART 1 GENERAL

1.1 SUMMARY

Pursuant to the requirements of the CONTRACT CLAUSE, “Layout of Work” the Contractor shall provide all materials, items, operations and methods specified, listed or scheduled in specifications and drawings, including all materials, labor, equipment and incidentals necessary and required to conduct proper surveys required to stake and layout the Work.

1.2 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330; SUBMITTAL PROCEDURES.

SD-08 Statements

Surveyor’s Name and Qualifications; GA

SD-13 Certificates

Survey Certificate; GA

A certificate signed by the land surveyor stating that the elevations and locations of the Work are in conformance with Contract Documents shall be submitted at Contract closeout.

SD-18 Records

Survey Data; GA

Original field books, field notebooks and data from electronic data recorders shall be submitted to the Contracting Officer at Contract closeout or upon request of the Contracting Officer.

Control Plan Changes; FIO

1.3 QUALIFICATIONS

The surveyor performing the on site construction staking shall be a licensed California surveyor and shall have a minimum of 5 years of construction staking experience. A resume detailing the experience level of the licensed land surveyor shall be submitted to the Contracting Officer for review 10 days prior to the start of any staking activities.

1.4 SURVEY CONTROL

Contractor shall use the control points established and shown on the Drawings. As the work progresses, all subsequent changes to the control plan shall be submitted.

1.4.1 Coordinate System and Elevation Datum

All surveys shall use the coordinate system and elevation datum as shown on the Drawings.

1.4.2 Primary Control

Contractor shall be responsible for checking the position of the reference points comprising the primary control prior to starting site work and shall notify the Contracting Officer if any discrepancies are found between actual and record measurements. Permanent reference points shall not be relocated without prior written approval from the Contracting Officer. Protection of monuments and stakes shall be the responsibility of Contractor. Replacement of damaged control and reference points shall be at Contractor's expense.

1.4.3 Secondary Control

From the primary reference control, the Contractor shall establish secondary control points necessary for the construction of the Work. Secondary control shall consist of sufficient permanent points to establish the lines and grades for the various Work items either directly or by offset. Layout lines for use in constructing the Work shall be taken directly from either the primary or secondary control. Secondary control shall be tied to and closed upon the primary control. Secondary control networks shall be adjusted prior to use in developing subsequent control or in laying out the Work.

1.5 ACCURACY OF SURVEYS

1. Points for cross sections shall be located to the nearest 0.05 foot horizontally and vertically.
2. Vertical elevation surveys shall close within 0.05 foot times the square root of the length of the circuit in miles.
3. All grade stakes shall be set to 0.02 foot.
4. Alignment of tangents and curves shall be within 0.01 foot.
5. Points for structures shall be set to the nearest 0.02 foot, except where operational function of special features require closer tolerances.
6. Survey ~~movement~~ monuments ***installed as specified in Section 13300, "Instrumentation"*** shall be surveyed ***to second order accuracy.*** ~~within an accuracy of 0.01 foot vertical and 0.05 foot horizontal~~.
7. Tolerances for all other Work shall be as shown or specified in the Contract Documents.
8. Instruments shall be accurate and shall be subject to inspection by the Contracting Officer for proper operation.

1.6 PROTECTION OF MONUMENTS, STAKES, AND MARKS

Contractor shall preserve and protect all survey monuments and related marks. When removal is necessary, Contractor shall accurately reference the monuments or related marks.

1. Except for boundary monuments, all other survey stakes, control points, monuments, benchmarks, or reference stakes disturbed or destroyed during the work shall be replaced and reset by the Contractor.
2. Primary or secondary control monuments removed shall be reset by Contractor as soon as the Work requiring the removal is complete. Alternatively, other control points may be set so as to reestablish the control network.
3. The position of monuments, control points, or other marks that are subject to movement due to the passage of equipment or other forces shall be rechecked at regular intervals, but not less than monthly.

1.7 QUANTITY SURVEYS

Following the completion of all the clearing and grubbing in operations in an area, and before commencing excavation, Contractor shall prepare a baseline survey consisting of, at a minimum, cross sections at 50-foot intervals to be used as the initial basis for payment. The same cross sections shall be used for all subsequent measurement of quantities. Excavation and fill quantities shall be calculated by either the average end area method or by using digital terrain models. Each month, Contractor shall prepare an estimate of the volume of earthwork accomplished for review by the Contracting Officer. When the work performed under each bid item is completed, Contractor shall perform a final survey using the same cross sections established during the baseline survey. This survey shall be used by Contractor to estimate final quantities for review and acceptance by the Contracting Officer. Contractor shall submit all cross section survey data and quantity calculations to the Contracting Officer.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

Contractor shall lay out all Work and perform all surveys for the Work including establishing and reestablishing construction control, resetting of stakes and monuments, measurement for payment of completed work, and performing surveys needed for restoration of public and private improvements that have been damaged, destroyed, or relocated by Contractor. All surveys and staking shall be performed under the direction of a land surveyor licensed in the State of California.

END OF SECTION

General Decision Number CA020029
Superseded General Decision No. CA010029
State: California Construction Type:
BUILDING
DREDGING
HEAVY
HIGHWAY
County(ies):

ALAMEDA	MARIPOSA	SAN MATEO
CALAVERAS	MERCED	SANTA CLARA
CONTRA COSTA	MONTEREY	SANTA CRUZ
FRESNO	SAN BENITO	STANISLAUS
KINGS	SAN FRANCISCO	TUOLUMNE
MADERA	SAN JOAQUIN	

BUILDING CONSTRUCTION PROJECTS; DREDGING PROJECTS (does not include hopper dredge work); HEAVY CONSTRUCTION PROJECTS (does not include water well drilling); HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	03/01/2002
1	03/08/2002
2	03/22/2002
3	03/29/2002
4	04/12/2002
5	04/19/2002
6	05/10/2002
7	05/17/2002
8	05/31/2002
9	06/07/2002
10	06/14/2002

COUNTY(ies):

ALAMEDA	MARIPOSA	SAN MATEO		
CALAVERAS	MERCED	SANTA CLARA	CONTRA COSTA	MONTEREY
SANTA CRUZ				
FRESNO	SAN BENITO	STANISLAUS		
KINGS	SAN FRANCISCO	TUOLUMNE		
MADERA	SAN JOAQUIN			

ASBE0016A 01/01/2002

	Rates	Fringes
Includes the application of all insulating materials, protective coverings, coatings, and finishings to all types of mechanical systems		
INSULATOR/ASBESTOS WORKER	37.53	9.01

ASBE0016E 01/01/2002

	Rates	Fringes
ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES: Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not		
HAZARDOUS MATERIAL HANDLER	22.81	2.35

CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY,

SAN BENITO, SAN JOAQUIN, SANTA CRUZ, STANISLAUS AND TUOLUMNE COUNTIES
Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not

HAZARDOUS MATERIAL HANDLER	13.32	1.90

ASBE0016F 05/01/1999

	Rates	Fringes
CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, STANISLAUS AND TUOLUMNE COUNTIES:		
Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not		
HAZARDOUS MATERIAL HANDLER	22.01	4.28

BOIL0549B 10/01/2001

	Rates	Fringes
BOILERMAKER	31.51	11.95

BRCA0003B 08/01/2001

	Rates	Fringes
MARBLE FINISHER	24.12	5.87

BRCA0003D 08/01/2001

	Rates	Fringes
MARBLE MASON	33.84	10.91

BRCA0003G 07/01/2001

	Rates	Fringes
SAN FRANCISCO AND SAN MATEO COUNTIES:		
BRICKLAYER	31.80	10.50
ALAMEDA, CONTRA COSTA, SAN BENITO AND SANTA CLARA COUNTIES		
BRICKLAYERS	30.52	9.63
CALAVERAS, SAN JOAQUIN, STANISLAUS AND TOULUMNE COUNTIES		
BRICKLAYERS	26.65	8.25
MONTEREY AND SAN CRUZ COUNTIES		
BRICKLAYERS	28.48	10.00
FRESNO, KINGS, MADERA, MARIPOSA AND MERCED COUNTIES	24.70	8.8O

FOOTNOTES: Operating a saw or grinder: $0.50 per hour additional.
Gunite nozzle person: $1.00 per hour additional.

BRCA0003P 07/01/2001

	Rates	Fringes
TERRAZZO WORKER	33.80	10.15
TERRAZZO FINISHER	18.06	6.57

BRCA0003T 04/01/2002

	Rates	Fringes
ALAMEDA, CONTRA COSTA, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA AND SANTA CRUZ COUNTIES:		
TILE LAYER	34.13	7.20
TILE FINISHER	17.16	5.97
CALAVERAS, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES		
TILE LAYER	28.43	7.15
TILER FINISHER	18.66	5.97
FRESNO, KINGS, MADERA, MARIPOSA AND MERCED COUNTIES		
TILE LAYER	26.27	5.65
TILE FINISHER	18.55	4.77

CARP0003A 08/01/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES		
DRYWALL INSTALLER/LATHER	29.00	11.885
DRYWALL STOCKER/SCRAPPER	14.50	6.515
MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES		
New Projects valued over $25 Million dollars		
DRYWALL INSTALLER/LATHER	29.00	11.885
DRYWALL STOCKER/SCRAPPER	14.50	6.515
New Project valued $25 Million and under		
DRYWALL INSTALLER/LATHER	24.37	11.885
DRYWALL STOCKER/SCRAPPER	12.19	6.515
New Projects valued over $25 Million dollars		
DRYWALL INSTALLER/LATHER	29.00	11.885
DRYWALL STOCKER/SCRAPPER	14.50	6.515
REMAINDER OF COUNTIES:		
DRYWALL INSTALLER/LATHER	23.52	11.885
DRYWALL STOCKER/SCRAPPER	11.76	6.515

CARP0034A 07/01/2001

	Rates	Fringes
DIVERS:		
Diver standby	31.52	13.945
Diver wet pay	42.77	13.945
Tender	31.52	13.945
Saturation diver	46.50	13.945
DEPTH PAY (Surface Diving):		
50 to 100 ft	$1.32/ft	
100 to 150 ft	$66.00 + $1.85/ft	
150 to 200 ft	$158.00 + $2.65/ft	
200 ft and over	$291.00 + $3.00/ft	

CARP0034C 07/01/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO, AND SANTA CLARA COUNTIES:		
PILEDRIVER	28.65	13.985
*PILEDRIVER - BRIDGE BUILDER	29.00	11.445
CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS, AND TUOLUMNE COUNTIES:		
PILEDRIVER	28.65	13.985
*PILEDRIVER - BRIDGE BUILDER	26.68	11.445
MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES:		

PILEDRIVER 28.65 13.985
*PILEDRIVER - BRIDGE BUILDER 27.24 11.445

*FOOTNOTE: Effective 7/1/2001 new projects public or private, vaulved at twenty five million dollars or more shall be paid at the Alameda, Contra Costa, San Francisco, San Mateo, and Santa Clara counties rate.

*PILEDRIVER BRIDGE BUILDERS 29.00 11.485

CARP0035A 07/01/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO, AND SANTA CLARA COUNTIES:		
CARPENTER	29.00	11.445
HARDWOOD FLOORLAYER; SHINGLER; POWER SAW OPERATOR; STEEL SCAFFOLD AND STEEL SHORING ERECTOR; SAW FILER	29.15	11.445
BRIDGE BUILDERS	29.00	11.445
MILLWRIGHT	29.10	12.785
CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS, AND TUOLUMNE COUNTIES:		
CARPENTER	23.02	11.445
HARDWOOD FLOORLAYER; SHINGLER; POWER SAW OPERATOR; STEEL SCAFFOLD AND STEEL SHORING ERECTOR; SAW FILER	23.17	11.445
BRIDGE BUILDERS	25.52	11.445
MILLWRIGHT	24.77	12.785
MONTEREY, SAN BENITO, AND SANTA CRUZ COUNTIES:		
CARPENTER	24.37	11.445
HARDWOOD FLOORLAYER; SHINGLER; POWER SAW OPERATOR; STEEL SCAFFOLD AND STEEL SHORING ERECTOR; SAW FILER	24.52	11.445
BRIDGE BUILDERS	27.24	11.445
MILLWRIGHT	26.12	12.785

FOOTNOTE: Effective 7/1/2001 new projects public or private, valued at twenty-five million dollars or more shall be paid at the Alameda, Contra Costa, San Francisco, San Mato, and Santa Clara counties rate.

CARP0035H 07/01/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO, SANTA CLARA COUNTIES		
MODULAR FURNITURE INSTALLER	18.22	5.355
MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES		
MODULAR FURNITURE INSTALLER	15.67	5.355
CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS, TUOLUMNE COUNTIES		
MODULAR FURNITURE INSTALLER	14.76	5.355

ELEC0006A 12/01/2000

	Rates	Fringes
ALAMEDA, CONTRA COSTA, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA, AND SANTA CRUZ COUNTIES:		
COMMUNICATIONS AND SYSTEMS WORK:		
Communications and Systems		

Installer	23.32	3%+4.10
Communications and Systems Technician	26.55	3%+4.10

SCOPE OF WORK:
Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.
FOOTNOTE:
Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC0006H 06/01/2001

	Rates	Fringes
SAN FRANCISCO COUNTY:		
ELECTRICIAN	42.93	13.195

ELEC0006K 12/01/1999

	Rates	Fringes
CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:		
COMMUNICATIONS AND SYSTEMS WORK:		
Communications and Systems Installer	18.72	3%+4.10
Communications and Systems Technician	21.31	3%+4.10

SCOPE OF WORK:
Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.
FOOTNOTE: Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC0100C 06/01/2002

	Rates	Fringes
FRESNO, KINGS, AND MADERA COUNTIES:		
ELECTRICIAN	27.10	3%+8.81

ELEC0100F 01/07/2002

	Rates	Fringes
FRESNO, KINGS, MADERA AND TULARE COUNTIES:		
COMMUNICATIONS AND SYSTEMS		
INSTALLER	21.47	3%+5.40

SCOPE OF WORK

Includes the installation testing, service and maintenance, of the following systems which utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms, and low voltage master clock systems.

A. SOUND AND VOICE TRANSMISSION/TRANSFERENCE SYSTEMS
- Background foreground musicc
- Intercom and telephone interconnect systems
- Telephone systems
- Nurse call systems
- Radio page systems
- School intercom and sound systems
- Burglar alarm systems
- Low voltage master clock systems
- Multi-media/multiplex systems
- Sound and musical entertainment systems
- RF systems
- Antennas and Wave Guide

B. FIRE ALARM SYSTEMS
- Installation, wire pulling and testing

C. TELEVISION AND VIDEO SYSTEMS
- Television monitoring and surveillance systems
- Video security systems
- Video entertainment systems
- Video educational systems
- Microwave transmission systems
- CATV and CCTV

D. SECURITY SYSTEMS
- Perimeter security systems
- Vibration sensor systems
- Card access systems
- Access control systems
- Sonar/infrared monitoring equipment

E. COMMUNICATIONS SYSTEMS THAT TRANSMIT OR RECEIVE INFORMATION AND/OR CONTROL SYSTEMS THAT ARE INTRINSIC TO THE ABOVE LISTED SYSTEMS
- SCADA (Supervisory Control and Data Acquisition)
- PCM (Pulse Code Modulation)
- Inventory Control Systems
- Digital Data Systems
- Broadband and Baseband and Carriers

Point of Sale Systems
VSAT Data Systems
Data Communication Systems
RF and Remote Control Systems
Fiber Optic Data Systems

WORK EXCLUDED

Raceway systems are not covered (excluding Ladder-Rack for the purpose of the above listed systems). Chases and/or nipples (not to exceed 10 feet) may be installed on open wiring systems.
Energy management systems.
SCADA (Supervisory Control and Data Acquisition) when not intrinsic to the above listed systems (in the scope).
Fire alarm systems when installed in raceways (including wire and cable pulling) shall be performed at the electrician wage rate, when either of the following two (2) conditions apply:

1. The project involves new or major remodel building trades construction.
2. The conductors for the fire alarm system are installed in conduit.

ELEC0234A 12/24/2001

	Rates	Fringes
MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES:		
ELECTRICIANS	32.06	3% + 11.59

ELEC0302A 06/01/2001

	Rates	Fringes
CONTRA COSTA COUNTY:		
ELECTRICIANS	35.01	3%+8.90
CABLE SPLICER	38.51	3%+8.90

ELEC0332A 06/01/2002

	Rates	Fringes
SANTA CLARA COUNTY:		
ELECTRICIAN	42.57	3%+11.27
CABLE SPLICER	48.96	3%+11.27

FOOTNOTES:

Work under compressed air or where gas masks are required, or work on ladders, scaffolds, stacks, "Bosun's chairs," or other structures and where the workers are not protected by permanent guard rails at a distance of 40 to 60 ft. from the ground or supporting structures: to be paid one and one-half times the straight-time rate of pay.

Work on structures of 60 ft. or over (as described above): to be paid twice the straight-time rate of pay.

ELEC0595A 06/01/2002

	Rates	Fringes
ALAMEDA COUNTY:		
Electricians	37.00	3%+14.35
Cable Splicers	41.63	3%+14.35

ELEC0595B 06/01/2002

	Rates	Fringes
CALAVERAS AND SAN JOAQUIN COUNTIES:		
TUNNEL WORK:		
Electrician	28.32	7.5%+11.96

Cable splicer	31.84	7.5%+11.96
ALL OTHER WORK:		
Electrician	28.19	7.5%+11.96
Cable splicer	31.71	7.5%+11.96

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* ELEC0617A 06/01/2002

	Rates	Fringes
SAN MATEO COUNTY:		
ELECTRICIAN	42.30	3%+11.66

ELEC0684A 07/01/2001

	Rates	Fringes
MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES:		
Electrician	28.02	7%+9.05
Cable splicer	30.82	7%+9.05

ELEC1245A 06/01/2002

	Rates	Fringes
LINE CONSTRUCTION		
Lineman; Cable splicer	33.16	4.5%+7.08
Equipment specialist (operates crawler tractors, commercial motor vehicles, backhoes, trenchers, cranes (50 tons and below), and overhead and underground distribution line equipment)	28.19	4.5%+6.80
Groundman	21.56	4.5%+6.80
Powderman	31.51	4.5%+6.84

ELEV0008A 08/01/2001

	Rates	Fringes
ELEVATOR MECHANIC	42.735	7.455

FOOTNOTE:

Vacation Pay: 8% with 5 or more years of service, 6% for 6 months to 5 years service. Paid Holidays: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Friday after, and Christmas Day.

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* ENGI0001A 05/01/1999

	Rates	Fringes
POWER EQUIPMENT OPERATORS		
CRANES AND ATTACHMENTS		
DREDGING		
TUNNEL AND UNDERGROUND		

These areas do not apply to piledrivers and steel erectors.

AREA 1: ALAMEDA, CONTRA COSTA, KINGS, MERCED, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ AND STANISLAUS COUNTIES

The remaining counties are split between Area 1 and Area 2 as noted below:

CALAVERAS COUNTY:

AREA 1: Area within the line beginning at the southernmost point of Calaveras County,

Thence northerly along the southeasterly county line to the intersection with the easterly line of Range 15 East,

Thence northerly to the northeast corner of Township 5N,

Range 15E,
Thence westerly to the southeast corner of Township 6N, Range 14E,
Thence northerly along the range line to the intersection with the northerly line of said county,
Thence westerly and southerly along the county line to the point of beginning.
AREA 2: Remainder of Calaveras County.
FRESNO COUNTY:
AREA 1: Area within the line beginning at the southeast corner of Township 13S, Range 28E,
Thence northerly to the northeast corner of Township 13S, Range 28E,
Thence westerly to the southeast corner of Township 12S, Range 27E,
Thence northerly to the northeast corner of Township 12S, Range 27E,
Thence westerly to the southeast corner of Township 11S, Range 26E,
Thence northerly to the northeast corner of Township 11S, Range 26E,
Thence westerly to the southeast corner of Township 10S, Range 25E,
Thence northerly to the northeast corner of Township 9S, Range 25E,
Thence westerly to the southeast corner of Township 8S, Range 24E,
Thence northerly to the northeast corner of Township 8S, Range 24E,
Thence westerly along the north line of Township 8S to the intersection with the Fresno County line,
Thence southwesterly and northwesterly along said county line to the intersection with the southeasterly line of Merced County,
Thence southwesterly along said county line to the intersection with the easterly line of San Benito County,
Thence southerly along said county line to the intersection with the easterly line of Monterey County,
Thence southeasterly along said county line to the intersection with the northwesterly line of Kings County,
Thence northeasterly along the southeasterly line of Fresno County to the point of beginning.
AREA 2: Remainder of Fresno County.
MADERA COUNTY:
AREA 1: Area within the line beginning at the point of intersection of Fresno County, Madera County, and Merced County,
Thence southeasterly and northeasterly along the southerly line of Madera County to the intersection with the northerly line of Township 8S,
Thence westerly to the southeast corner of Township 7S, Range 23E,
Thence northerly to the northeast corner of Township 6S, Range 23E,
Thence westerly along the north line of Township 6S to the intersection of the northwesterly line of Madera County,
Thence southwesterly along said county line to the point of

beginning.
AREA 2: Remainder of Madera County.
MARIPOSA COUNTY:
AREA 1: Area within the line beginning at the point of intersection of Stanislaus County with Mariposa County,
Thence southeasterly along the westerly line of Mariposa County to the intersection of Madera County,
Thence northeasterly along said county line to the itersection of the southerly line of Township 5S,
Thence westerly to the southeast corner of Township 5S, Range 20E,
Thence northerly to the northeast corner of Township 5S, Range 20E,
Thence westerly to the southeast corner of Township 4S, Range 19E,
Thence northerly along the range line to the intersection with the northerly line of Mariposa County,
Thence westerly along said county line to the point of beginning.
AREA 2: Remainder of Mariposa County.
MONTEREY COUNTY:
AREA 1: Area within a line beginning at the intersection of the southerly line of Township 19S with the Pacific Ocean,
Thence easterly along the southerly line of Township 19S to the northwest corner of Township 20S, Range 6E,
Thence southerly to the southwest corner of Township 20S, range 6E,
Thence easterly to the northwest corner of Township 21S, Range 7E,
Thence southerly to the southwest corner of Township 21S, Range 7E,
Thence easterly to the northwest corner of Township 22S, Range 9E,
Thence southerly to the southwest corner of Township 22S, Range 9E,
Thence easterly to the northwest corner of Township 23S, Range 10E,
Thence southerly to the southwest corner of Township 24S, Range 10E,
Thence easterly along the southerly line of Township 24S to the southeasterly corner of Monterey County,
Thence northwesterly along said county line to the point of intersection with the southerly line of Santa Cruz County,
Thence westerly along the northerly line of Monterey County to the Pacific Ocean,
Thence southerly along the Pacific Ocean to the point of beginning.
AREA 2: Remainder of Monterey County.
TUOLUMNE COUNTY:
AREA 1: Area within the line beginning at the point of intersection of the easterly line of Township 2S, Range 19E, with the southerly line of Tuolumne County,
Thence northerly to the northeast corner of Township 1S, Range 19E,
Thence westerly to the southeast corner of Township 1N, Range 18E,
Thence northerly to the northeast corner of Township 3N,

Range 18E,
Thence westerly to the southeast corner of Township 4N, Range 17E,
Thence northerly to the northeast corner of Township 4N, Range 17E,
Thence northerly to the northeast corner of Township 4N, Range 17E,
Thence westerly to the southeast corner of Township 5N, Range 15E,
Thence northerly to the intersection of the county line with the easterly line of Township 5N, Range 15E,
Thence southwesterly along the county line to the intersection of the northeasterly line of Stanislaus County,
Thence southeasterly along said county line to the southernmost corner of Tuolumne County,
Thence easterly along the county line to the point of beginning.
AREA 2: Remainder of Tuolumne County.

ENGI0003B 07/01/2001

	Rates	Fringes
POWER EQUIPMENT OPERATORS:		
DREDGING: CLAMSHELL & DIPPER DREDGING;		
HYDRAULIC SUCTION DREDGING:		
AREA 1:		
Leverman	34.39	12.37
Dredge dozer; Heavy duty repairman	29.43	12.37
Booster pump operator; Deck engineer; Deck mate; Dredge tender; Winch operator	28.31	12.37
Bargeman; Deckhand; Fireman; Leveehand; Oiler	25.01	12.37
AREA 2:		
Leverman	36.39	12.37
Dredge dozer; Heavy duty repairman	31.43	12.37
Booster pump operator; Deck engineer; Deck mate; Dredge tender; Winch operator	30.31	12.37
Bargeman; Deckhand; Fireman Leveehand; Oiler	27.01	12.37

ENGI0004L 06/16/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, CALAVERAS, FRESNO, KINGS, MADERA, MERCED, MARIPOSA, MONTEREY, SAN FRANCISCO, SAN JOQUIN, SANTA CRUZ, SAN MATEO, SANTA CLARA, STANISLAUS AND TUOLUMNE COUNTIES:		
POWER EQUIPMENT OPERATORS:		
AREA 1:		
GROUP 1	33.42	12.97
GROUP 2	31.89	12.97
GROUP 3	30.41	12.97
GROUP 4	29.03	12.97
GROUP 5	27.76	12.97

GROUP 6	26.44	12.97
GROUP 7	25.30	12.97
GROUP 8	24.16	12.97
GROUP 8-A	21.95	12.97
AREA 2:		
GROUP 1	35.42	12.97
GROUP 2	33.89	12.97
GROUP 3	32.41	12.97
GROUP 4	31.03	12.97
GROUP 5	29.76	12.97
GROUP 6	28.44	12.97
GROUP 7	27.30	12.97
GROUP 8	26.16	12.97
GROUP 8-A	23.95	12.97
POWER EQUIPMENT OPERATORS - ALL CRANES AND ATTACHMENTS:		
AREA 1:		
GROUP 1	34.30	12.97
Truck crane oiler	27.33	12.97
Oiler	25.04	12.97
GROUP 2	32.54	12.97
Truck crane oiler	27.07	12.97
Oiler	24.83	12.97
GROUP 3	30.80	12.97
Truck crane oiler	26.83	12.97
Hydraulic	26.44	12.97
Oiler	24.55	12.97
AREA 2:		
GROUP 1	36.30	12.97
Truck crane oiler	29.33	12.97
Oiler	27.04	12.97
GROUP 2	34.54	12.97
Truck crane oiler	29.07	12.97
Oiler	26.83	12.97
GROUP 3	32.80	12.97
Truck crane oiler	28.83	12.97
Hydraulic	28.44	12.97
Oiler	26.55	12.97
POWER EQUIPMENT OPERATORS - PILEDRIVERS:		
GROUP 1	34.64	12.97
Truck crane oiler	27.66	12.97
Oiler	25.11	12.97
GROUP 2	32.82	12.97
Truck crane oiler	27.41	12.97
Oiler	25.11	12.97
GROUP 3	31.14	12.97
Truck crane oiler	27.12	12.97
Oiler	24.89	12.97
GROUP 4	29.37	12.97
GROUP 5	26.73	12.97
GROUP 6	24.50	12.97
POWER EQUIPMENT OPERATORS - STEEL ERECTION:		
GROUP 1	35.27	12.97
Truck crane oiler	27.95	12.97
Oiler	25.72	12.97
GROUP 2	33.50	12.97
Truck crane oiler	27.73	12.97
Oiler	25.45	12.97

GROUP 3	32.02	12.97
Truck crane oiler	27.46	12.97
Hydraulic	27.07	12.97
Oiler	25.23	12.97
GROUP 4	30.00	12.97
GROUP 5	28.70	12.97

POWER EQUIPMENT OPERATORS TUNNEL AND UNDERGROUND WORK:

AREA 1:		
UNDERGROUND:		
GROUP 1-A	31.89	12.97
GROUP 1	29.42	12.97
GROUP 2	28.16	12.97
GROUP 3	26.83	12.97
GROUP 4	25.69	12.97
GROUP 5	24.55	12.97
SHAFTS, STOPES AND RAISES:		
GROUP 1-A	31.99	12.97
GROUP 1	29.52	12.97
GROUP 2	28.26	12.97
GROUP 3	26.93	12.97
GROUP 4	25.79	12.97
GROUP 5	24.65	12.97
AREA 2:		
UNDERGROUND:		
GROUP 1-A	33.89	12.97
GROUP 1	31.42	12.97
GROUP 2	30.16	12.97
GROUP 3	28.83	12.97
GROUP 4	27.69	12.97
GROUP 5	26.55	12.97
SHAFTS, STOPES AND RAISES:		
GROUP 1-A	33.99	12.97
GROUP 1	31.52	12.97
GROUP 2	30.26	12.97
GROUP 3	28.93	12.97
GROUP 4	27.79	12.97
GROUP 5	26.65	12.97

FOOTNOTE: Work suspended by ropes or cables, or work on a Yo-Yo Cat: $.60 per hour additional.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Operator of helicopter (when used in erection work); Hydraulic excavator, 7 cu. yds. and over; Power shovels, over 7 cu. yds.

GROUP 2: Highline cableway; Hydraulic excavator, 3-1/2 cu. yds. up to 7 cu. yds.; Power blade operator (finish); Power shovels, over 1 cu. yd. up to and including 7 cu. yds. m.r.c.

GROUP 3: Asphalt milling machine; Cable backhoe; Combination backhoe and loader over 3/4 cu. yds.; Continuous flight tie back machine; Crane mounted continuous flight tie back machine; Crane mounted drill attachment, tonnage to apply; Dozer, slope brd; Gradall; Hydraulic excavator, up to 3 1/2 cu. yds.; Loader 4 cu. yds. and over; Multiple engine scraper (when used as push pull); Power shovels, up to and including 1 cu. yd.; Pre-stress wire wrapping machine; Side boom cat, 572 or larger; Track loader 4 cu. yds. and over; Wheel excavator (up to and including 750 cu. yds. per hour)

GROUP 4: Asphalt plant engineer/box person; Chicago boom;

Combination backhoe and loader up to and including 3/4 cu. yd.; Concrete batch plant (wet or dry); Dozer and/or push cat; Pull-type elevating loader; Gradesetter, grade checker (GPS, mechanical or otherwise); Grooving and grinding machine; Heading shield operator; Heavy-duty drilling equipment, Hughes, LDH, Watson 3000 or similar; Heavy-duty repairperson and/or welder; Lime spreader; Loader under 4 cu. yds.; Lubrication and service engineer (mobile and grease rack); Mechanical finishers or spreader machine (asphalt, Barber-Greene and similar); Miller Formless M-9000 slope paver or similar; Portable crushing and screening plants; Power blade support; Roller operator, asphalt; Rubber-tired scraper, self-loading (paddle-wheels, etc.); Rubber-tired earthmoving equipment (scrapers); Slip form paver (concrete); Small tractor with drag; Soil stabilizer (P & H or equal); Timber skidder; Track loader up to 4 yds.; Tractor-drawn scraper; Tractor, compressor drill combination; Welder; Woods-Mixer (and other similar Pugmill equipment)

GROUP 5: Cast-in-place pipe laying machine; Combination slusher and motor operator; Concrete conveyor or concrete pump, truck or equipment mounted; Concrete conveyor, building site; Concrete pump or pumpcrete gun; Drilling equipment, Watson 2000, Texoma 700 or similar; Drilling and boring machinery, horizontal (not to apply to waterliners, wagon drills or jackhammers); Concrete mixer/all; Person and/or material hoist; Mechanical finishers (concrete) (Clary, Johnson, Bidwell Bridge Deck or similar types); Mechanical burm, curb and/or curb and gutter machine, concrete or asphalt); Mine or shaft hoist; Portable crusher; Power jumbo operator (setting slip-forms, etc., in tunnels); Screed (automatic or manual); Self-propelled compactor with dozer; Tractor with boom D6 or smaller; Trenching machine, maximum digging capacity over 5 ft. depth; Vermeer T-600B rock cutter or similar

GROUP 6: Armor-Coater (or similar); Ballast jack tamper; Boom-type backfilling machine; Assistant plant engineer; Bridge and/or gantry crane; Chemical grouting machine, truck-mounted; Chip spreading machine operator; Concrete saw (self-propelled unit on streets, highways, airports and canals); Deck engineer; Drilling equipment Texoma 600, Hughes 200 Series or similar up to and including 30 ft. m.r.c.; Drill doctor; Helicopter radio operator; Hydro-hammer or similar; Line master; Skidsteer loader, Bobcat larger than 743 series or similar (with attachments); Locomotive; Lull hi-lift or similar; Oiler, truck mounted equipment; Pavement breaker, truck-mounted, with compressor combination; Paving fabric installation and/or laying machine; Pipe bending machine (pipelines only); Pipe wrapping machine (tractor propelled and supported); Screed (except asphaltic concrete paving); Self-propelled pipeline wrapping machine; Soils & materials tester; Tractor

GROUP 7: Ballast regulator; Boom truck or dual-purpose A-frame truck, non-rotating - under 15 tons; Truck-mounted rotating telescopic boom type lifting device, Manitex or similar (boom truck) - under 15 tons; Cary lift or similar; Combination slurry mixer and/or cleaner; Drilling equipment, 20 ft. and under m.r.c.; Firetender (hot plant); Grouting machine operator; Highline cableway signalperson; Stationary belt loader (Kolman or similar); Lift slab machine (Vagtborg and similar types); Maginnes internal full slab vibrator; Material hoist (1 drum);

Mechanical trench shield; Pavement breaker with or without compressor combination); Pipe cleaning machine (tractor propelled and supported); Post driver; Roller (except asphalt); Chip Seal; Self-propelled automatically applied concrete curing mahcine (on streets, highways, airports and canals); Self-propelled compactor (without dozer); Signalperson; Slip-form pumps (lifting device for concrete forms); Tie spacer; Tower mobile; Trenching machine, maximum digging capacity up to and including 5 ft. depth; Truck-type loader

GROUP 8: Bit sharpener; Boiler tender; Box operator; Brakeperson; Combination mixer and compressor (shotcrete/gunite); Compressor operator; Deckhand; Fire tender; Forklift (under 20 ft.); Generator; Gunite/shotcrete equipment operator; Hydraulic monitor; Ken seal machine (or similar); Mixermobile; Oiler; Pump operator; Refrigeration plant; Reservoir-debris tug (self-propelled floating); Ross Carrier (construction site); Rotomist operator; Self-propelled tape machine; Shuttlecar; Self-propelled power sweeper operator (includes vacuum sweeper); Slusher operator; Surface heater; Switchperson; Tar pot firetender; Tugger hoist, single drum; Vacuum cooling plant; Welding machine (powered other than by electricity)

GROUP 8-A: Elevator operator; Skidsteer loader - Bobcat 743 series or smaller, and similar (without attachments); Mini excavator under 25 H.P. (backhoe - trencher)

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

ALL CRANES AND ATTACHMENTS

GROUP 1: Clamshell and dragline over 7 cu. yds.; Crane, over 100 tons; Derrick, over 100 tons; Derrick barge pedestal-mounted, over 100 tons; Self-propelled boom-type lifting device, over 100 tons

GROUP 2: Clamshell and dragline over 1 cu. yd. up to and including 7 cu. yds.; Crane, over 45 tons up to and including 100 tons; Derrick barge, 100 tons and under; Self-propelled boom-type lifting device, over 45 tons; Mobile self-erecting tower crane (Potain) over three (3) stories

GROUP 3: Clamshell and dragline up to and including 1 cu. yd.; Crane, 45 tons and under; Self-propelled boom-type lifting device, 45 tons and under; Truck-mounted rotating telescopic boom type lifting device, Manitex or similar (boom truck) - under 15 tons; Boom truck or dual purpose A-frame truck, non-rotating, over 15 tons

GROUP 3A: Mobile self-erecting tower crane (Potain) three (3) stories or under

POWER EQUIPMENT OPERATORS - PILEDRIVERS

GROUP 1: Derrick barge pedestal mounted over 100 tons; Clamshell over 7 cu. yds.; Self-propelled boom-type lifting device over 100 tons; Truck crane or crawler, land or barge mounted over 100 tons

GROUP 2: Derrick barge pedestal mounted 45 tons to and including 100 tons; Clamshell up to and including 7 cu. yds.; Self-propelled boom-type lifting device over 45 tons; Truck crane or crawler, land or barge mounted, over 45 tons up to and including 100 tons

GROUP 3: Derrick barge pedestal mounted under 45 tons; Self-propelled boom-type lifting device 45 tons and under; Skid/scow piledriver, any tonnage; Truck crane or crawler, land or barge mounted 45 tons and under

GROUP 4: Assistant operator in lieu of assistant to engineer; Forklift, 10 tons and over; Heavy-duty repairperson/welder
GROUP 5: Deck engineer
GROUP 6: Deckhand; Fire tender

POWER EQUIPMENT OPERATORS - STEEL ERECTORS

GROUP 1: Crane over 100 tons; Derrick over 100 tons; Self-propelled boom-type lifting device over 100 tons
GROUP 2: Crane over 45 tons to 100 tons; Derrick under 100 tons; Self-propelled boom-type lifting device over 45 tons to 100 tons; Tower crane
GROUP 3: Crane, 45 tons and under; Self-propelled boom-type lifting device, 45 tons and under
GROUP 4: Chicago boom; Forklift, 10 tons and over; Heavy-duty repair person/welder
GROUP 5: Boom cat

POWER EQUIUPMENT OPERATORS: TUNNEL AND UNDERGROUND WORK

GROUP 1-A: Tunnel bore machine operator, 20' diameter or more
GROUP 1: Heading shield operator; Heavy-duty repairperson; Mucking machine (rubber tired, rail or track type); Raised bore operator (tunnels); Tunnel mole bore operator
GROUP 2: Combination slusher and motor operator; Concrete pump or pumpcrete gun; Power jumbo operator
GROUP 3: Drill doctor; Mine or shaft hoist
GROUP 4: Combination slurry mixer cleaner; Grouting Machine operator; Motorman
GROUP 5: Bit Sharpener; Brakeman; Combination mixer and compressor (gunite); Compressor operator; Oiler; Pump operator; Slusher operator

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IRON0001U 07/01/2001

	Rates	Fringes
ALAMEDA, CALAVERAS, CONTRA COSTA, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, STANISLAUS AND TUOLUMNE COUNTIES:		
IRONWORKERS:		
Fence erector	25.19	14.575
Ornamental, reinforcing and structural	26.08	14.575

IRON0001V 07/01/2001

	Rates	Fringes
MONTEREY COUNTY:		
IRONWORKERS:		
Fence erector	25.19	14.575
Ornamental, reinforcing and structural	26.08	14.575

FOOTNOTE:
Work at the Army Defense Language Institute, and the Naval Post Graduate School: $2.00 per hour additional.

LABO0036A 07/01/2001

	Rates	Fringes
SAN FRANCISCO AND SAN MATEO COUNTIES:		
BRICK TENDER	23.32	9.61

FOOTNOTES: Underground work such as sewers, manholes, catch basins, sewer pipes, telephone conduits, tunnels and cut trenches: $5.00 per day additional.

Work in live sewage: $2.50 per day additional.

LABO0036B 07/01/2001

	Rates	Fringes
SAN FRANCISCO AND SAN MATEO COUNTIES:		
PLASTERER TENDER	23.32	9.69

FOOTNOTES: Work on a suspended scaffold: $5.00 per day additional. Work operating a plaster mixer pump gun: $1.00 per hour additional.

LABO0067B 12/01/2001

	Rates	Fringes
ALAMEDA, CALAVERAS, CONTRA COSTA, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN MATEO, SANTA CLARA, SAN FRANCISCO, SAN JOAQUIN, SANTA CRUZ, STANISLAUS, AND TUOLUMNE COUNTIES:		
ASBESTOS REMOVAL LABORER	10.30	2.11

SCOPE OF WORK:
Covers site mobilization; initial site clean-up; site preparation; removal of asbestos-containing materials from walls and ceilings; or from pipes, boilers and mechanical systems only if they are being scrapped; encapsulation, enclosure and disposal of asbestos-containing materials by hand or with equipment or machinery; scaffolding; fabrication of temporary wooden barriers; and assembly of decontamination stations.

LABO0067H 06/25/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES:		
LABORERS:		
Construction specialist group	23.34	8.13
Group 1	22.64	8.13
Group 1-a	22.86	8.13
GROUP 1-b: see note below		
GROUP 1-c	22.69	8.13
GROUP 1-d: see note below		
GROUP 1-e	23.19	8.13
GROUP 1-f	21.22	8.13
GROUP 1-g (Contra Costa County)	21.36	8.13
GROUP 2	21.49	8.13
GROUP 3	21.39	8.13
GROUP 4	15.08	8.13
See groups 1-b and 1-d under laborer classifications.		
GUNITE LABORERS:		
GROUP 1	23.60	8.13
GROUP 2	23.10	8.13
GROUP 3	22.51	8.13
GROUP 4	22.39	8.13
WRECKING WORK:		
GROUP 1	22.64	8.13
GROUP 2	22.49	8.13
GROUP 3	16.08	8.13
GARDENERS, HORTICULTURAL AND LANDSCAPE LABORERS:		
New construction	22.39	8.13
Establishment warranty period	16.08	8.13
CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SANTA CRUZ, SAN JOAQUIN, STANISLAUS		

AND TUOLUMNE COUNTIES:

LABORERS:		
Construction specialist group	22.34	8.13
Group 1	21.64	8.13
Group 1-a	21.86	8.13
GROUP 1-b: see note below		
GROUP 1-c	21.69	8.13
GROUP 1-d: see note below		
GROUP 1-e	22.19	8.13
GROUP 1-f	21.22	8.13
GROUP 2	21.49	8.13
GROUP 3	21.39	8.13
GROUP 4	15.08	8.13

See groups 1-b and 1-d under laborer classifications.

GUNITE LABORERS:		
GROUP 1	23.60	8.13
GROUP 2	23.10	8.13
GROUP 3	22.51	8.13
GROUP 4	22.39	8.13
WRECKING WORK:		
GROUP 1	22.64	8.13
GROUP 2	22.49	8.13
GROUP 3	16.08	8.13
GARDENERS, HORTICULTURAL AND LANDSCAPE LABORERS:		
New construction	21.39	8.13
Establishment warranty period	15.08	8.13

FOOTNOTES: Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive $0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work; Masonry and plasterer tender; Cast-in-place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and bucker; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting, whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post

hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun; Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive $ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 1-g, CONTRA COSTA COUNTY: Pipelayer (including grade checking in connection with pipelaying); Caulker; Bander; Pipewrapper; Conduit layer; Plastic pipe layer; Pressure pipe tester; No joint pipe and stripping of same, including repair of voids; Precast manhole setters, cast in place manhole form setters

GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete construction; Pittsburgh chipper and

similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches
GROUP 3: Construction laborers, including bridge and general laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)
GROUP 4: All clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:
A: at demolition site for the salvage of the material.
B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.
C: for the cleaning of salvage material at the jobsite or temporary jobsite yard.
The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling and moving to the next point of erection".
GUNITE LABORER CLASSIFICATIONS
GROUP 1: Structural nozzle operator
GROUP 2: Nozzle operator (including gun, pot); Ground person
GROUP 3: Rebound
GROUP 4: Gunite laborer
WRECKING WORK LABORER CLASSIFICATIONS
GROUP 1: Skilled wrecker (removing and salvaging of sash, windows and materials)
GROUP 2: Semi-skilled wrecker (salvaging of other building materials)
GROUP 3: General laborer (includes all clean-up work, loading lumber, loading and burning of debris)

LABO0067N 06/25/2001

	Rates	Fringes
TUNNEL AND SHAFT LABORERS:		
GROUP 1	27.00	8.13
GROUP 2	26.77	8.13
GROUP 3	26.52	8.13
GROUP 4	26.25	8.13
GROUP 5	26.07	8.13
GROUP 6	25.53	8.13

TUNNEL AND SHAFT CLASSIFICATIONS
GROUP 1: Diamond driller; Ground person; Gunite and shotcrete nozzle operator
GROUP 2: Rod person; Shaft work & raise (below actual or excavated ground level)
GROUP 3: Bit grinder; Blaster, driller, powder person - heading; Cherry picker operator - where car is lifted; Concrete finisher in tunnel; Concrete screed person; Grout pump operator and pot person; Gunite & shotcrete gun person & pot person; Header person; High pressure nozzle operator; Miner - tunnel, including top and bottom person on shaft and raise work; Nipper;

Nozzle operator on slick line; Sandblaster - pot person
GROUP 4: Steel form raiser and setter; Timber person, retimber person (wood or steel or substitute materials therefore); Tugger (for tunnel laborer work); Cable tender; Chuck tender; Powder person - primer house
GROUP 5: Vibrator operator, pavement breaker; Bull gang - muckers, track person; Concrete crew - includes rodding and spreading
GROUP 6: Dump person (any method); Grout crew; Rebound person; Swamper

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LABO0073C 07/01/2001

	Rates	Fringes
CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:		
BRICK TENDER	23.34	5.36

LABO0073E 01/01/2001

	Rates	Fringes
CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:		
PLASTERER TENDER	21.10	8.25

LABO0166A 07/01/1999

	Rates	Fringes
ALAMEDA AND CONTRA COSTA COUNTIES:		
BRICK TENDER	20.90	10.26

FOOTNOTES:
Work on jobs where heat-protective clothing is required: $2.00 per hour additional.
Work at grinders: $.25 per hour additional.
Manhole work: $2.00 per day additional.

LABO0166B 07/01/1999

	Rates	Fringes
ALAMEDA AND CONTRA COSTA COUNTIES:		
PLASTERER TENDERS:		
Plasterer tender	23.25	10.16
Gun operator	24.00	10.16

LABO0185A 07/01/2001

	Rates	Fringes
MONTEREY AND SAN BENITO COUNTIES:		
BRICK TENDER	23.24	5.36

LABO0270A 07/01/2001

	Rates	Fringes
SANTA CLARA COUNTY:		
BRICK TENDER	24.05	6.15

FOOTNOTE: $2.00 per hour for refactory work where heat-protective clothing is required.

ANTA CRUZ COUNTY:		
BRICK TENDER	23.05	6.15

LABO0270E 07/01/2000

	Rates	Fringes
SAN BENITO, SANTA CLARA AND SANTA CRUZ COUNTIES:		

All wood framed buildings
four (4) stories or less
and excludes steel structures,
structures with metal studs
 PLASTER TENDER 22.68 6.85
All wood framed buildings
five (5) stories or more
includes all steel structures
and all structures with metal
studs
 PLASTER TENDER 24.60 6.75

 LABO0294A 07/01/2001

	Rates	Fringes
FRESNO, KINGS AND MADERA COUNTIES:		
BRICK TENDER	23.64	5.36

 LABO0297A 09/01/1998

	Rates	Fringes
MONTEREY AND SAN BENITO COUNTIES:		
PLASTERER TENDER	15.95	

FOOTNOTE:
  Mixer person: $4.00 per day additional.

 PAIN0012A 07/01/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, MERCED, MARIPOSA, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA AND SANTA CRUZ COUNTIES:		
SOFT FLOOR LAYER	30.00	11.25

 PAIN0016A 07/01/2001

	Rates	Fringes
ALAMEDA AND CONTRA COSTA:		
PAINTERS:		
Work on industrial buildings (used for the manufacture and processing of goods for sale or service); Also, steel construction (bridges), stacks, towers, tanks and similar structures):		
Brush and Roller	28.35	9.52
Working over 50 feet	30.35	9.52
100 to 180 feet	32.35	9.52
over 180 feet	34.35	9.52
Spray and Sandblast	28.85	9.52
Working over 50 feet	30.85	9.52
100 to 180 feet	32.85	9.52
over 180 feet	34.85	9.52
Application of Exotic materials	29.10	9.52
Working over 50 feet	31.10	9.52
100 to 180 feet	33.10	9.52
over 180 feet	35.10	9.52
All Other Work:		
Brush and Roller	28.10	9.52
Working over 50 feet	30.10	9.52
100 to 180 feet	32.10	9.52

over 180 feet	34.10	9.52
Application of Exotic materials	28.85	9.52
Working over 50 feet	30.85	9.52
100 to 180 feet	32.85	9.52
over 180 feet	34.85	9.52

PAIN0016C 02/01/2002

	Rates	Fringes
CALAVERAS, MARIPOSA, MERCED, MONTEREY, SAN BENITO SAN JOAQUIN, SANTA CRUZ, STANISLAUS, TUOLUMNE COUNTIES:		
DRYWALL FINISHER/TAPER	30.28	8.78
ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES:		
DRYWALL FINISHER/TAPER	32.93	10.13

PAIN0016H 07/01/2001

	Rates	Fringes
FRESNO, KINGS AND MADERA COUNTIES:		
DRYWALL TAPER	21.83	5.98
PAINTER	20.58	5.98

FOOTNOTES: Paperhangers, and work over 30 feet (does not include work from a lift): $0.50 per hour additional.
Spray painters and sandblasters: $0.75 per hour additional.
Lead paint abaters: $0.75 per hour additional.

PAIN0016K 01/01/1999

	Rates	Fringes
FRESNO, KINGS, MADERA AND COUNTIES:		
SOFT FLOOR LAYER	18.63	4.09

PAIN0016N 07/01/2001

	Rates	Fringes
MONTEREY, SAN BENITO, SAN MATEO, SANTA CLARA AND SANTA CRUZ COUNTIES:		
PAINTER:	28.55	8.62

PAIN0016Q 03/01/1999

	Rates	Fringes
CALAVERAS AND SAN JOAQUIN COUNTIES:		
PAINTERS:		
Brush	18.05	7.23
Sandblaster; Waterblaster; Steam cleaning	19.05	7.23
Work with coal tar and exotic materials	19.80	7.23

PAIN0016S 11/01/2001

	Rates	Fringes
MARIPOSA, MERCED, STANISLAUS, AND TOULUMNE COUNTIES:		
PAINTER:		
Brush	20.41	7.82
Paperhanger; Spray & Sandblast	21.41	7.82
Hazardous coating, application and removal	22.16	7.82

PAIN0016Y 07/01/2001

	Rates	Fringes
SAN FRANCISCO COUNTY:		
PAINTER	29.56	8.20

PAIN0169A 07/01/2001

	Rates	Fringes
FRESNO, KINGS, MADERA, MARIPOSA AND MERCED COUNTIES:		
GLAZIER	24.75	8.52

PAIN0169E 07/01/2000

	Rates	Fringes
ALAMEDA AND CONTRA COSTA COUNTIES:		
GLAZIER	29.35	9.91

PAIN0169I 07/01/2000

	Rates	Fringes
ALAMEDA AND CONTRA COSTA:		
SHOWER DOOR INSTALLER	23.57	4.60

PAID HOLIDAYS:
New Year's Day, President's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Day after Thanksgiving, and Christmas Day.

PAIN0718B 07/01/2001

	Rates	Fringes
SAN FRANCISCO AND SAN MATEO COUNTIES:		
GLAZIER	29.37	11.09

PAIN0767A 07/01/2001

	Rates	Fringes
CALAVERAS, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:		
GLAZIER	27.93	8.41

PAID HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, Fourth July, Labor Day, Thanksgiving Day, Day after Thanksgiving Day, and Christmas Day.
FOOTNOTE: Work thirty (30) feet or over free fall: $0.60 per hour additional.

PAIN1176A 06/26/2000

	Rates	Fringes
PARKING LOT STRIPING/HIGHWAY MARKING:		
GROUP 1	22.84	6.91
GROUP 2	22.45	6.91
GROUP 3	19.51	6.91
GROUP 4	22.15	6.91
Service Person (maintenance and repair of equipment)	13.33	5.87
Parking Lot, Game Court and Playground Installer	19.51	6.91

PARKING LOT STRIPING / HIGHWAY MARKING CLASSIFICATIONS
GROUP 1: STRIPER: Layout and application of painted traffic stripes and marking; hot thermo plastic; tape traffic stripes and markings
GROUP 2: TRAFFIC DELINEATING DEVICE APPLICATOR: Layout and application of pavement markers, delineating signs, rumble and traffic bars, adhesives, guide markers, other traffic delineating devices; includes all related surface preparation (sandblasting,

waterblasting, grinding) as part of the application process
GROUP 3: TRAFFIC SURFACE ABRASIVE BLASTER: Removal of traffic lines and markings; preparation of surface for coatings and traffic control devices
GROUP 4: TRAFFIC PROTECTIVE DELINEATING SYSTEMS INSTALLER: Removes, relocates, installs permanently affixed roadside and parking delineation barricades, fencing, guard rail, cable anchor, retaining walls, reference signs, and monument markers

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PAIN1237C 06/01/2001

	Rates	Fringes
CALAVERAS; SAN JOAQUIN COUNTIES; STANISLAUS AND TUOLUMNE COUNTIES:		
SOFT FLOOR LAYER	25.00	7.17

PAIN1621A 07/01/2001

	Rates	Fringes
MONTEREY, SAN BENITO, SANTA CLARA AND SANTA CRUZ COUNTIES:		
GLAZIER	30.87	9.59

PLAS0001D 07/01/2001

	Rates	Fringes
CEMENT MASON	27.18	7.58

PLAS0066B 07/01/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, SAN MATEO AND SAN FRANCISCO COUNTIES:		
PLASTERER	28.76	11.40

PLAS0300A 01/01/2002

	Rates	Fringes
FRESNO, KINGS AND MADERA COUNTIES:		
PLASTERER	23.33	8.65
SAN BENITO, SANTA CLARA AND SANTA CRUZ COUNTIES:		
PLASTERER	27.75	8.65
CALAVERAS AND SAN JOAQUIN COUNTIES:		
PLASTERER	26.17	8.65
MONTEREY COUNTY:		
PLASTERER	24.39	8.65
MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES:		
PLASTERER	26.18	8.65

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* PLUM0036A 01/01/2002

	Rates	Fringes
CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:		
PLUMBER & STEAMFITTER	28.79	10.94
FRENSO, KINGS AND MADERA COUNTIES:		
PLUMBER & STEAMFITTER	28.29	10.94

PLUM0036E 01/01/2000

	Rates	Fringes
FRESNO COUNTY:		
BUILDING CONSTRUCTION ONLY		
PIPE TRADESMAN	11.50	4.70

SCOPE OF WORK

Installation of corrugated metal piping for drainage, as well as installation of corrugated metal piping for culverts in connection with storm sewers and drains; Grouting, dry packing and diapering of joints, holes or chases including paving over joints, in piping; Temporary piping for dirt work for building site preparation; Operating jack hammers, pavement breakers, chipping guns, concrete saws and spades to cut holes, chases and channels for piping systems; Digging, grading, backfilling and ground preparation for all types of pipe to all points of the jobsite; Ground preparation including ground leveling, layout and planting of shrubbery, trees and ground cover, including watering, mowing, edging, pruning and fertilizing, the breaking of concrete, digging, backfilling and tamping for the preparation and completion of all work in connection with lawn sprinkler and landscaping; Loading, unloading and distributing materials at jobsite; Putting away materials in storage bins in jobsite secure storage area; Demolition of piping and fixtures for remodeling and additions; Setting up and tearing down work benches, ladders and job shacks; Clean-up and sweeping of jobsite; Pipe wrapping and waterproofing where tar or similar material is applied for protection of buried piping; Flag person

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PLUM0036I 01/01/2000

	Rates	Fringes
MERCED COUNTY:		
PIPE TRADES PERSON:		
Building construction only	11.50	4.70

SCOPE OF WORK:

Installation of corrugated metal piping for drainage, as well as installation of corrugated metal piping for culverts in connection with storm sewers and drains; Grouting, dry packing and diapering of joints, holes or chases including paving over joints, in piping; Temporary piping for dirt work for building site preparation; Operating jack hammers, pavement breakers, chipping guns, concrete saws and spades to cut holes, chases and channels for piping systems; Digging, grading, backfilling and ground preparation for all types of pipe to all points of the jobsite; Ground preparation including ground leveling, layout and planting of shrubbery, trees and ground cover, including watering, mowing, edging, pruning and fertilizing, the breaking of concrete, digging, backfilling and tamping for the preparation and completion of all work in connection with lawn sprinkler and landscaping; Loading, unloading and distributing materials at jobsite; Putting away materials in storage bins in jobsite secure storage area; Demolition of piping and fixtures for remodeling and additions; Setting up and tearing down work benches, ladders and job shacks; Clean-up and sweeping of jobsite; Pipe wrapping and waterproofing where tar or similar material is applied for protection of buried piping; Flag person

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* PLUM0036U 01/01/2002

	Rates	Fringes
MONTEREY AND SANTA CRUZ COUNTIES:		
PLUMBER & STEAMFITTER	30.54	10.94

PLUM0038A 07/01/2000

	Rates	Fringes

SAN FRANCISCO COUNTY:
 PLUMBERS:
  Work on wooden frame structures
5 stories or less excluding
high-rise buildings and
commercial work such as
hospitals, prisons, hotels
and schools 28.50 17.35
 All other work 39.00 21.55
LANDSCAPE/IRRIGATION FITTER 27.32 10.15

 PLUM0159A 07/01/2001

	Rates	Fringes
CONTRA COSTA COUNTY:		
Construction of motels		
under 4 stories		
PLUMBERS & STEAMFITTERS	26.61	9.39
All other work		
PLUMBERS & STEAMFITTERS	34.41	14.09

 PLUM0342A 07/01/2001

	Rates	Fringes
ALAMEDA COUNTY		
PLUMBERS, PIPEFITTERS		
AND STEAMFITTER	35.76	13.44

 PLUM0355D 07/01/2001

	Rates	Fringes
ALAMEDA, CALAVERAS, CONTRA COSTA, FRESNO, KINGS, MADERA,		
MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SAN MATEO,		
SANTA CLARA, SANTA CRUZ, STANISLAUS, AND TUOLUMNE COUNTIES:		
LANDSCAPE FITTER; UNDERGROUND UTILITY		
WORKER	22.25	5.95

 PLUM0393A 07/01/2001

	Rates	Fringes
SAN BENITO AND SANTA CLARA COUNTIES:		
PLUMBER & PIPEFITTER:		
Work on motels and hotels which		
do not exceed 4 stories in		
height, excluding garages and		
parking areas	20.64	5.30
All other work	41.80	10.78

 PLUM0467A 07/01/2001

	Rates	Fringes
SAN MATEO COUNTY:		
PLUMBER, PIPEFITTER, & STEAMFITTER		
REFRIGERATION & AIR CONDITIONING	39.15	11.05
ALL OTHER WORK	37.90	11.76

 ROOF0027C 01/01/2002

	Rates	Fringes
FRESNO, KINGS, AND MADERA COUNTIES:		
ROOFER	21.40	6.90

FOOTNOTE: Work with pitch, pitch base of pitch
 impregnated products or any material containing coal

tar pitch, on any building old or new, where both asphalt and pitchers are used in the application of a built-up roof or tear off: $2.00 per hour additional.

ROOF0040B 08/01/2001

	Rates	Fringes
SAN FRANCISCO & SAN MATEO COUNTIES:		
ROOFER	22.87	11.27

ROOF0081A 08/01/2000

	Rates	Fringes
ALAMEDA AND CONTRA COSTA COUNTIES:		
ROOFER	22.80	9.85

ROOF0081E 08/01/2001

	Rates	Fringes
CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:		
ROOFER	19.8	6.15

ROOF0095B 08/01/1996

	Rates	Fringes
MONTEREY, SAN BENITO, SANTA CLARA, AND SANTA CRUZ COUNTIES:		
ROOFERS:		
Kettle person (2 kettles); Bitumastic, enameler, coal tar, pitch and mastic worker	26.07	6.75
All other work	24.07	6.75

SFCA0483A 08/01/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES:		
SPRINKLER FITTER (FIRE)	36.59	11.20

SFCA0669K 04/01/2002

	Rates	Fringes
CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, STANISLAUS AND TUOLUMNE COUNTIES:		
SPRINKLER FITTER (FIRE)	29.35	6.05

SHEE0104A 07/01/2001

	Rates	Fringes
ALAMEDA AND CONTRA COSTA COUNTIES:		
Work on projects with an HVAC contract price of $270,000 equipped with packaged units or a unitary system; Also, tenant completion work extending from an existing trunk line or an existing water or air loop to registers and/or diffusers; Also, remodel or add-on contracts on existing facilities providing the contract price is $165,000 or		

less; Also, architectural sheet metal contracts of $100,000 or less; Also, pre-engineered and pre-manufactured siding

SHEET METAL WORKER	31.31	14.35
ALL OTHER WORK:		
SHEET METAL WORKER	37.00	14.52

SHEE0104B 07/01/2001

	Rates	Fringes
MONTEREY AND SAN BENITO COUNTIES:		
SHEET METAL WORKER	30.93	12.28

SHEE0104D 07/01/2001

	Rates	Fringes
SAN MATEO COUNTY:		
Work with an HVAC contract price of $270,000 equipped with packaged units or a unitary system; Also, tenant completion work extending from an existing trunk line or air loop to registers and/or diffusers; Also, remodel or add-on contracts on existing facilities providing the contract price is $165,000 or less; Also, architectural sheet metal contracts of $100,000 or less; Also, pre-engineered and pre-manufactured siding		
SHEET METAL WORKER	34.15	12.56
ALL OTHER WORK		
SHEET METAL WORKER	38.05	13.27

SHEE0104E 07/01/2001

	Rates	Fringes
SAN FRANCISCO COUNTY:		
Work with an HVAC contract price of $80,000 or less; Also, tenant completion work providing the contract price is $80,000 or less; Also, remodel or add-on contracts on existing facilities providing the contract price is $50,000 or less; Also, architectural sheet metal contracts of $100,000 or less; Also, pre-engineered and pre-manufactured siding		
SHEET METAL WORKER	36.44	13.17
ALL OTHER WORK:		
SHEET METAL WORKER	37.21	14.30

SHEE0104G 07/01/2001

	Rates	Fringes
SANTA CRUZ COUNTY:		

SHEET METAL WORKER 32.35 10.86

SHEE0104H 07/01/2001

	Rates	Fringes
SANTA CLARA COUNTY:		
Work with an HVAC contract price of $270,000 equipped with packaged units or a unitary system; Also, tenant completion work extending from an existing trunk line or air loop to registers and/or diffusers; Also, remodel or add-on contracts on existing facilities providing the contract price is $165,000 or less; Also, architectural sheet metal contracts of $100,000 or less; Also pre-engineered and pre-manufactured siding	35.94	11.51
ALL OTHER WORK		
SHEET METAL WORKER	38.15	13.35

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* SHEE0104O 07/01/2001

	Rates	Fringes
ALAMEDA, CONTRA COSTA, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA AND SANTA CRUZ COUNTIES:		
Metal decking and siding only:		
SHEETMETAL WORKER	27.02	14.72

SHEE0162A 01/01/2002

	Rates	Fringes
CALAVERAS AND SAN JOAQUIN COUNTIES:		
SHEET METAL WORKER	26.82	10.38

SHEE0162C 07/01/2001

	Rates	Fringes
MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES:		
SHEET METAL WORKER (excluding metal deck and siding)	27.25	11.46

SHEE0162D 06/01/2001

	Rates	Fringes
FRESNO, KINGS, AND MADERA COUNTIES:		
SHEET METAL WORKER	27.57	12.21

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* SHEE0162M 07/01/1999

	Rates	Fringes
CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:		
Metal decking and siding only:		
SHEET METAL WORKER	29.42	9.52

TEAM0094A 06/25/2001

	Rates	Fringes
TRUCK DRIVERS:		
GROUP 1	22.62	12.25

GROUP 2	22.92	12.25
GROUP 3	23.22	12.25
GROUP 4	23.57	12.25
GROUP 5	23.92	12.25

FOOTNOTES:

Articulated dump truck; Bulk cement spreader (with or without auger); Dumpcrete truck; Skid truck (debris box); Dry pre-batch concrete mix trucks; Dumpster or similar type; Slurry truck: Use dump truck yardage rate.

Heater planer; Asphalt burner; Scarifier burner; Industrial lift truck (mechanical tailgate); Utility and clean-up truck: Use appropriate rate for the power unit or the equipment utilized.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Dump trucks, under 6 yds.; Single unit flat rack (2-axle unit); Nipper truck (when flat rack truck is used appropriate flat rack shall apply); Concrete pump truck (when flat rack truck is used appropriate flat rack shall apply); Concrete pump machine; Fork lift and lift jitneys; Fuel and/or grease truck driver or fuel person; Snow buggy; Steam cleaning; Bus or personhaul driver; Escort or pilot car driver; Pickup truck; Teamster oiler/greaser and/or serviceperson; Hook tender (including loading and unloading); Team driver; Tool room attendant (refineries)

GROUP 2: Dump trucks, 6 yds. and under 8 yds.; Transit mixers, through 10 yds.; Water trucks, under 7,000 gals.; Jetting trucks, under 7,000 gals.; Vacuum trucks, under 7,500 gals.; Single-unit flat rack (3-axle unit); Highbed heavy duty transport; Scissor truck; Rubber-tired muck car (not self-loaded); Rubber-tired truck jumbo; Winch truck and "A" frame drivers; Combination winch truck with hoist; Road oil truck or bootperson; Buggymobile; Ross, Hyster and similar straddle carriers; Small rubber-tired tractor

GROUP 3: Dump trucks, 8 yds. and including 35 yds.; Transit mixers, over 10 yds.; Water trucks, 7,000 gals. and over; Jetting trucks, 7,000 gals. and over; Vacuum trucks, 7,500 gals. and over; Trucks towing tilt bed or flat bed pull trailers; Lowbed heavy duty transport; Heavy duty transport tiller person; Self-propelled street sweeper with self-contained refuse bin; Boom truck - hydro-lift or Swedish type extension or retracting crane; P.B. or similar type self-loading truck; Tire repairperson; Truck repairperson; Combination bootperson and road oiler; Dry distribution truck (A bootperson when employed on such equipment, shall receive the rate specified for the classification of road oil trucks or bootperson); Ammonia nitrate distributor, driver and mixer; Snow Go and/or plow

GROUP 4: Dump trucks, over 35 yds. and under 65 yds.; Water pulls - DW 10's, 20's, 21's and other similar equipment when pulling Aqua/pak or water tank trailers; Helicopter pilots (when transporting men and materials); DW10's, 20's, 21's and other similar Cat type, Terra Cobra, LeTourneau Pulls, Tournorocker, Euclid and similar type equipment when pulling fuel and/or grease tank trailers or other miscellaneous trailers

GROUP 5: Dump trucks, 65 yds. and over; Holland hauler

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

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SECTION 02151

TEMPORARY SHORING

PART 1 GENERAL

1.1 SUMMARY

The work specified in this section includes but is not limited to the design, installation and testing of the temporary excavation shoring systems required for the construction of the concrete culvert, inlet retaining walls, and box culvert termination bulkhead (including steel support structure). Except where otherwise specified, the temporary shoring systems shall be selected by the Contractor, but will be subject to approval by the Contracting Officer. ~~Sheetpile shoring systems will not be approved.~~ Where specific temporary shoring systems are specified, the locations are indicated on the contract Drawings but these locations are not inclusive of all shoring needs. Open cut excavation will only be permitted on the east side of the culvert between the west culvert inlet and New Julian Street. Temporary shoring requirements for utility work are specified in Section 02222; EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITY SYSTEMS.

1.2 REFERENCES

The following publications of the issues listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The latest edition available on the date of the Notice Inviting Bids shall be used.

UNIFORM BUILDING CODE

AMERICAN INSTITUTE OF STEEL CONSTRUCTION
Manual of Steel Construction

POST-TENSIONING INSTITUTE
Recommendations for Prestressed Rock and Soil Anchors

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
California Trenching and Shoring Manual (CATSM)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 36 Structural Steel.

A 328 Steel Sheet Piling.

A 416 Uncoated Seven-Wire Stress-Relieved Steel Strand for Prestressed Concrete.

A 615 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

A 772 Uncoated High-Strength Steel Bars for Prestressed Concrete.

A 779 Steel Strand, Seven Wire, Uncoated, Compacted, Stress-Relieved for Prestressed Concrete.

U.S. ARMY CORPS OF ENGINEERS

EM 385-1-1 Safety and Health Requirements Manual.

1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. All calculations and shop drawings shall be designed and stamped by a California licensed civil engineer. The following shall be submitted to the Contracting Officer thirty (30) days prior to excavation for review and general comments in accordance with Section 01330; SUBMITTAL PROCEDURES.

SD-01 Data:

Design Calculations; GA:

Submit design calculations for Deep Soil Mix wall, other shoring systems, and box culvert termination bulkhead and steel support structure. Design calculations shall include assumed soil parameters, lateral earth pressures and distributions, DSM mix design, H-pile size and length, ***vertical and horizontal spacing for lateral support, tieback*** anchor ***soil*** interface values and anchor***age*** length, tendon sizing, and ***shoring system*** stability analyses.

SD-04 Drawings

Shop Drawings; GA

Submit shop drawings including materials list, construction details, sequence of operations, typical sections, and details showing relationship of anchors or wall elements with respect to existing utilities, buildings and Work Limits. ***In addition, for DSM wall shoring submit a detailed description of the sequence of operations for installation of DSM wall, excavation, and installation of lateral support. Include the elevations of lateral support and the elevation of the excavation at the time lateral support is installed. Design calculations shall include the estimated deformation before and after each stage of excavation, at five foot intervals along the vertical face of the temporary shoring and at five foot intervals along the ground surface from the temporary support system to 20 feet perpendicularly from the box culvert. The maximum movement during excavation shall be in accordance with Paragraph 3.2.2.4.***

Lateral Support; GA

Submit details of proposed jacking procedures for tiebacks or for prestressing struts. Submit drawings showing the locations of tiebacks and soil nails in plan and elevation with respect to existing and new utilities, work limits, existing ground surface, bridge abutments including Saint John St, New Julian St, and buildings including but not limited to Sobrato Garage.

SD-08 Statements

Qualifications; GA

Submit shoring contractor license number and contact names, addresses and project descriptions of three shoring projects completed within the last five years that demonstrate conformance with the requirements of paragraph 1.5.

SD-09 Reports

Instrumentation Reports; FIO

Submit initial survey of settlement reference points established in paragraph 1.6. Submit reduced and tabulated inclinometer readings, settlement monument surveys, and settlement reference point surveys within 12 hours of the time the readings were taken.

1.4 DESCRIPTION

The temporary shoring system shall consist of Deep Soil Mixed (DSM) walls, concrete diaphragm walls, soldier piles with lagging, ***sheetpile walls,*** soil nails or equivalent systems ~~except sheetpile systems, which will not be allowed~~. Walls shall be externally or internally braced. Tiebacks, soil nails, or struts can be used for bracing. The box culvert termination bulkhead shall be as shown on the Drawings. Wherever a Subsurface Temporary Construction Easement (STCE) is shown on the Drawings, tiebacks, struts, or soil nails, shall not extend beyond it and shall not interfere with existing substructures, structures, or utilities. Tiebacks, struts, or soil nails shall not extend beyond Subsurface Temporary Construction Easement's (STCE) shown on the Drawings or 50 feet beyond the outside face of the box culvert without approval by the Contracting Officer. The maximum height of the unsupported face of the excavation shall be determined by the site conditions, and shall meet all excavation and trench requirements of applicable occupational safety and health standards, rules, regulations, and orders established by the State of California or the Corps of Engineers manual, EM 385-1-1, Safety and Health Requirements Manual, whichever is the most stringent. The maximum unsupported excavation shall not exceed 4 feet without geotechnical analysis. All tiebacks, struts, or soil nails shall be installed and tested for acceptance prior to excavating deeper. All work shall be constructed within the limits of work with the exception of the specially approved STCE for tiebacks or soil nails. Temporary shoring systems that could produce damaging distress (vibrations, settlement) to adjacent structures during installation will not be permitted.

Acceptance of the Contractor's method of temporary shoring and construction drawings by the Government shall not be construed to relieve the Contractor in any way from his responsibility for the successful performance of the temporary shoring work.

1.5 QUALIFICATIONS

The shoring systems shall be installed by a licensed contractor in the State of California who can also demonstrate successful experience on at least three projects within the last five years of a similar scope and magnitude in terms of the type(s) of wall and lateral support, the deflection control limitations required, and lateral and vertical dimensions of area to be supported. The shoring systems shall be designed by a California licensed civil engineer.

1.6 EXISTING CONDITIONS

Prior to the execution of the work, the Contractor and owners shall jointly survey the conditions of nearby structures that could be impacted by the temporary shoring system. Photographs and records shall be made of any prior signs of distress such as settlement, cracking, or signs of movement that could become subject of possible damage claims. Significant cracks or joints will be identified and measurement points shall be established to monitor any movement of the crack or joint during construction. The Contractor shall survey adjacent structures and improvements, and establish elevations at fixed points to act as settlement reference points that can be measured during phases of construction. All settlement reference points shall be recorded prior to construction and during excavation as described in paragraph 3.2.2.3. A California licensed land surveyor shall perform all survey work and all work associated with the measurement of crack monitoring points. Any changes in elevation or observed distress (cracks, movement, settlement) shall be reported immediately to the Contracting Officer's representative.

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

Steel soldier piles, walers, struts and braces shall conform to ASTM A 36, A 572 Grade 50, or A 588 Grade 50. ***Steel sheetpiling shall conform to ASTM A328.***

2.2 TIMBER LAGGING

Timber lagging shall be construction grade Douglas Fir or better conforming to the recommended thickness required by the California Trenching and Shoring Manual (CATSM).

2.3 TIEBACKS AND SOIL NAILS

Tiebacks and soil nails shall consist of bars meeting ASTM A 615 or A 772, or cables meeting ASTM A 416 or A 779.

2.4 CRACK TAPE

Tiebacks and soil nails shall consist of bars meeting ASTM A 615 or A 772, or cables meeting ASTM A 416 or A 779.

2.5 INSTRUMENTATION

See Section 13300; INSTRUMENTATION.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Design of Shoring System

Temporary shoring including all component members shall be designed by the Contractor to safely support earth pressures as well as all equipment, construction loads and other surcharge loads. The designed shoring system shall allow the safe construction of the culvert with minimal movement or settlement of the ground and to prevent damage to, or movement or settlement of, adjacent buildings, structures or utilities. Lateral and vertical movement, including earth support

system shall be limited to the maximum amounts specified in paragraph 3.2.2.4. Tiebacks and soil nails used to support temporary shoring for the west side of the box culvert excavation shall be designed such that they will be a minimum of 5 feet below the ground surface at any location along their entire length

The DSM wall shall have a minimum of three levels of prestressed lateral support between the existing ground surface and the bottom of the box culvert excavation.

The box culvert termination bulkhead shall be designed by the Contractor to safely support earth pressures as well as all equipment, construction loads and other surcharge loads for both short term construction conditions and for long term conditions. For long term conditions the design shall include internal support of the bulkhead against the box culvert. The design shall also include details and calculations for a steel support structure spanning the opening between the termination of the box culvert and the bulkhead. The steel support structure shall be designed for normal highway loads (HS 20-44).

The design of the shoring system shall follow the requirements and recommendations of the State of California Department of Transportation Trenching and Shoring Manual (CATSM). Design of lateral support shall be in accordance with standard practices and recommendations found in the Uniform Building Code, AISC Manual, and referenced Post-Tensioning Institute publication. The design of the shoring system shall be stamped and signed by a California Registered Civil Engineer.

3.1.2 Location of DSM Walls

DSM walls shall be used for excavation support in the following areas and as shown on the Drawings:

a. On the east side of the excavation in front of Sobrato Garage to CE Station 20+10.

b. DSM walls for termination bulkhead shall be installed on the east and west sides of the excavation from CE Station 20+00 to CE Station 20+10 and across the north end of the excavation at CE Station 20+00.

3.1.3 Installation

Install shoring systems in accordance with accepted working drawings. ***Excavation below the design level for installation of lateral support prior to installation of all of the lateral support for that level will not be allowed.*** All work shall be in accordance with the noise restrictions specified in Section 01500; GENERAL REQUIREMENTS.

3.1.3.1 Lagging

Install tight lagging. Pack or seal all voids behind lagging to minimize groundwater leakage and soil loss. Immediately grout all voids created during lagging installation using a lean sand-cement mix (3 to 1 sand cement ratio by weight with sufficient water added for flowability). Install and maintain shoring so as to prevent movement, settlement or loss of ground, removal of fines from adjacent ground, damage to or movement of adjacent structures.

3.1.3.2 Struts or Braces

Prestress struts or braces by introducing jacking load immediately after installation of the struts or braces. Prestress in accordance with methods, procedures, and sequence described in the accepted working drawings. Use steel shims and steel wedges welded or bolted in place to maintain prestressing load in the bracing or struts after release of jacking equipment pressure.

3.1.3.3 Tiebacks

Tieback drilling and installation procedures shall be designed to prevent loss of ground. This may require the use of hollow stem augers or casing to install tieback tendons.

The portion of the tieback hole located between the face of the shoring system and the design critical failure plane (active zone) shall be backfilled in such a manner as to prevent loosening of ground of sloughing of soil in this zone while the drill is being withdrawn. The backfill shall be of such a consistency so as to preclude an extension of the tieback anchor-to-soil load transfer into this zone.

3.1.3.4 Sheet Piling

All sheet piling shall be removed and shall be extracted without damaging adjacent fills or structures.

3.2 GROUND DEFORMATIONS

3.2.1 Pre-Construction Survey

The Contractor and the Contracting Officer will jointly perform a pre-construction survey of the Sobrato Garage, New Julian Street Bridge, and the St. John Street Bridge. The pre-construction survey shall include descriptions of the structural and architectural condition of the buildings along with supporting photographs.

3.2.2 Instrumentation

3.2.2.1 Inclinometers and Surface Settlement Points

In addition to settlement reference points established in paragraph 1.6, the Contractor shall install inclinometers and surface settlement monuments at Sobrato Garage at the approximate locations shown on the Drawings, two surface survey monuments on the west bank abutment of St. John Street Bridge at the locations directed by the Contracting Officer, and one surface survey monument on the base of the PG&E Tower (CE Station 30+95 just south of New Julian Street) at the locations directed by the Contracting Officer. The inclinometers and monuments shall be installed and two sets of baseline readings obtained at least 7 days prior to beginning ***dewatering and an additional two sets of readings 7 days prior to beginning*** excavation for culvert construction within 150 feet of Sobrato Garage or St. John Street Bridge. The Contractor shall install the inclinometer casing in drilled holes. The inclinometers shall extend a minimum of 30 feet deeper than the lowest elevation of the wall. A line of three (3) settlement points located on the ground surface behind each of the inclinometers shall be established and used to

measure the total settlement of the soil behind the shoring resulting from the deformation of the excavation and temporary shoring system

3.2.2.2 Tilt Meters

The Contractor shall install four tilt meters on the exterior of Sobrato Garage, at two locations at approximately the second and fourth levels of the structure. The Contractor shall install one tiltmeter on the base of the PG&E Tower (CE Station 30+95 just south of New Julian Street). The precise locations of the tiltmeters will be determined in the field by the Contracting Officer following completion of the pre-construction survey of the garage. The tilt meters shall be installed and baseline readings obtained at least 7 days prior to beginning ***dewatering and an additional set of readings 7 days prior to beginning*** excavation for culvert construction within 150 feet of Sobrato Garage or the PG&E Tower.

3.2.2.3 Instrumentation Monitoring

The Contractor shall retain a California licensed surveyor to measure crack monitoring points and to monitor settlement reference points and instrumentation for settlement or lateral movement of the shoring system and adjacent ground. Settlement of structures located adjacent to the excavation shoring shall be monitored. During excavation, inclinometer readings and surveys of settlement reference points and settlement monuments shall be taken for each 5-foot interval of excavation depth or once a week, whichever is more frequent. Inclinometer readings and surveys of settlement reference points and settlement monuments shall continue to be taken once a week through to completion of the box culvert adjacent to the instrumentation except instrumentation adjacent to Sobrato garage, which shall be monitored until completion of the Contract unless otherwise directed by the Contracting Officer in accordance with Section 13300; INSTRUMENTATION. All settlement readings shall be reduced, tabulated and submitted within 12 hours of the time the readings were taken to the Contracting Officer for review. If inclinometer readings or surveys indicate that ground deformation is occurring, the frequency of readings and surveys shall be increased as directed by the Contracting Officer .

3.2.2.4 Maximum Allowable Movement

Lateral and vertical movement of the surface survey monuments or cumulative movement at any point along the length of the inclinometers, shall be limited to the following maximum amounts:

a. Adjacent to the DSM wall : One (1) inch
b. Adjacent to the New Julian Street Bridge abutments : One (1) inch
c. Adjacent to the Saint John Bridge abutment : One (1) inch
d. Adjacent to any other settlement sensitive structures or utilities : One (1) inch
e. Shoring not covered above : Three (3) inches

The Contractor shall immediately cease all excavation activity in the event that ground deformation increases and approaches the limits specified in paragraph 3.2.2.4***, except in the case of DSM wall, where in addition, the Contractor shall cease all excavation activity in the event that ground deformation exceeds the Contractor's submitted estimated deformations at any time during excavation***. The Contractor shall submit a remedial plan to stabilize the

excavation and prevent any further ground deformation for approval by the Contracting Officer. The remedial plan shall be implemented prior to resuming excavation. All costs associated with any such remediation shall be borne by the Contractor.

3.3 DEEP SOIL MIXED (DSM) WALL

The DSM walls specified in Paragraph 3.1 shall conform to the following requirements:

a. Soil cement holes shall have a minimum diameter of 30 inches.

b. Adjacent holes shall overlap to produce a minimum wall thickness equal to two thirds of the hole diameter.

c. Soldier H-piles shall be installed in every other hole to the full depth of the hole.

d. Holes without soldier piles shall not extend further than three feet below the base of the excavation except between CE Station 20+10 and 20+00 (box culvert termination bulkhead) where all holes shall extend a minimum of 6 feet below the base of the excavation.

3.4 LATERAL SUPPORT TESTING PROCEDURES

3.4.1 Load Tests for Tiebacks and Soil Nails

Tiebacks and soil nails shall be load tested as specified herein.

a. Load testing shall not commence until grout has cured for at least 36 hours.

b. Loads shall be applied in accordance with the method described on the approved working drawings.

c. Applied test loads shall be determined with a calibrated pressure gauge or a calibrated load cell furnished by the Contractor.

d. Movement at the end of the tieback relative to a fixed reference point during load testing shall be measured and recorded to the nearest 0.001 inch.

e. The Contractor shall supply all monitoring and measuring devices.

f. For both the performance tests and the proof tests described in paragraphs 3.4.2 and 3.4.3, the observation period for the load hold shall start when the pump begins to apply the last increment of load. The last increment of load shall be applied in less than 60 seconds, and the one-minute reading shall be taken one minute after the pump began to apply the last increment of load. At each load increment, the jack shall be adjusted to maintain a constant load.

3.4.2 Performance Tests for Tiebacks

Performance tests shall be performed on one of the first three tiebacks installed and a minimum of 10 percent of the remaining tiebacks as selected by the Contracting Officer. Any changes in tieback design shall be accompanied by a performance test. All other tiebacks shall be proof tested.

a. The performance test shall be conducted by measuring the test load applied to the tieback and the tieback end movement during incremental loading and uploading to a maximum load of 1.5 times the design load "P_{DL}".

b. Table 02151-1 of this Section specifies the performance test-loading schedule.

c. The maximum test load shall be held constant for 1440 minutes (24 hours).

   1. During the load hold, the movement of the end of the tendon shall be measured at 1, 2, 3, 4, 5, 7, 10, 15, 20, 25, 30, 45, 60, 180 and 1440 minutes.

   2. If the creep movement of the tieback at a load of 1.5 times the design load is in excess of 0.080 inch per log cycle of time, the anchor will be considered unacceptable and shall be replaced.

3.4.3 Proof Tests for Tiebacks and Soil Nails

Proof tests shall be performed on all tiebacks that are not performance tested. Proof tests shall be performed on the first three soil nails installed and a minimum of ten percent thereafter as selected by the Contracting Officer. The proof test shall be conducted measuring the test load applied to the tieback or soil nail and the tieback or soil nail end movements during incremental loading of 0.25 times the design load to a maximum load of 1.25 times the design load "P_{DL}".

a. Table 02151-2 of this Section specifies the proof test loading schedule

b. The maximum test load shall be held constant for 15 minutes.

c. During the load hold, the movement of the end of the tendon shall be measured at 1, 2, 3, 4, 5, 7, and 10 minutes.

d. If the movement between 1 and 10 minutes exceeds 0.080 inch, or if there is a significant variation in performance compared with the performance test results specified in Paragraph 3.3.2, the load shall be maintained for an additional 50 minutes and measurements of the movement of the end of the tendon recorded at 15, 20, 25, 30, 45, and 60 minutes.

e. If creep movement at 60 minutes is in excess of 0.080 inch per log cycle of time, or if there is still a significant variation in performance compared with the performance test results as determined by the Contracting Officer, the anchor will be considered unacceptable.

f. Any tieback or soil nail that cannot be successfully tested to the specified required loads can only be incorporated into the design and construction by using one-half of the load that it will hold without continuous movement. Additional tiebacks shall be installed for the difference between the design and the reduced capacity of the failed tieback(s).

END OF SECTION

TABLE 02151-1

Loading Schedule for Performance Test

LOAD INCREMENT	BASIS OF LOAD	LOAD (tons)	OBSERVATION PERIOD (min)
T_0		0.1 P_{DL}	5
P_1	0.25 P_{DL}		5
T_0		0.1 P_{DL}	5
P_1	0.25 P_{DL}		5
P_2	0.50 P_{DL}		5
T_0		0.1 P_{DL}	5
P_1	0.25 P_{DL}		5
P_2	0.50 P_{DL}		5
P_3	0.75 P_{DL}		5
T_0		0.1 P_{DL}	5
P_1	0.25 P_{DL}		5
P_2	0.50 P_{DL}		5
P_3	0.75 P_{DL}		5
P_4	1.00 P_{DL}		5
T_0		0.1 P_{DL}	5
P_1	0.25 P_{DL}		5
P_2	0.50 P_{DL}		5
P_3	0.75 P_{DL}		5
P_4	1.00 P_{DL}		5
P_5	1.25 P_{DL}		5
P_6	1.50 P_{DL}		1440

LEGEND:
P_{DL}: Design Load
T_0: Alignment Load

Note: Record end movements during load increment P_6 at elapsed times of 1, 2, 3, 4, 5, 7, 10, 15, 20, 25, 30, 45, 60, 180 and 1440 minutes

TABLE 02151-2

Loading Schedule for Proof Test

LOAD INCREMENT	BASIS OF LOAD	LOAD (tons)	OBSERVATION PERIOD (min)
T_0		0.1 P_{DL}	5
P_1	0.25 P_{DL}		5
P_2	0.50 P_{DL}		5
P_3	0.75 P_{DL}		5
P_4	1.00 P_{DL}		5
P_5	1.25 P_{DL}		10

LEGEND:

P_{DL}: Design Load
T_0: Alignment Load

Note: Record end movements during load increment P_5 at elapsed times of 1, 2, 3, 4, 5, 7, and 10 minutes

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SECTION 02517

GRANITE

PART 1 GENERAL

1.1 SUMMARY

The work specified in this section includes the furnishing of fully fabricated granite components required for completion of all granite work indicated by the Contract Drawings and/or Specifications. The Contractor shall furnish labor, materials, equipment, and incidentals required and perform all operations in connection with the installation of the granite in accordance with the lines, grades, design and dimensions shown on the Drawings or otherwise established in the field by the Contracting Officer.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The latest edition available as of the date of Notice of Inviting Bids shall be used.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 144	Aggregate for Masonry Mortar
ASTM C 150	Portland Cement
ASTM C 207	Hydrated Lime for Masonry
ASTM C 270	Standard Specification for Mortar for Unit Masonry
ASTM D 1752	Performed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM C920	Elastomeric Joint Sealant

NATIONAL BUILDING GRANITE QUARRIES ASSOCIATION, INC. (NBGQA)

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330; SUBMITTAL PROCEDURES:

SD-04 Shop Drawings; GA

At least 60 days prior to start of any installation of granite, the Contractor shall submit to the Contracting Office shop Drawings for the layout and details of the granite. The layout shall be to the lines and grades shown on the contract Drawings. The shop Drawings shall include layout, layout sequence, anchor details, all dimensions, thicknesses, joints, and connections with other work.

SD-14 Samples, GA

Three 12-inch by 12-inch sample of each stone type and finish, GA.
One 12-inch by 12-inch sample of each stone type with engraved text, GA

The supplier from which the Contractor proposes to obtain materials shall be selected well in advance of the time when the materials will be required for the work. Contractor shall submit three 12-inch by 12-inch samples for each type of stone type and finish. Samples to show full range of colors, finish and pattern. Contractor to submit sealant and joint mortar for selection of color and expansion joint material. The Contractor shall also submit a sample of each font and each font size to be engraved on granite as shown on plans. All combinations of text and granite color should be represented. Submit documentation within five days after award of bid to shown that process of acquiring stone samples for review has been initiated. Quality shall match that of material samples available for viewing during bidding as described in Section 01500, General Conditions.

SD-14 Samples, Mock up, GA

Provide mock-up of granite paving of each type and area on Drawings that will receive granite paving. Provide entire section of seatwall indicated on plans including joints. Mock-up will be used for visual acceptance and to set standards of quality for finished work. After approval, mock-up may be incorporated into work.

1.4 ACQUISITION

Submit documentation to Landscape Architect within five days after award of bid to show that the process of acquiring granite samples for review has been initiated.

PART 2 PRODUCTS

2.1 GRANITE

2.1.1 Granite shall be Sierra White, Academy Black, Cold Spring Black and Radiant Red by Coldspring Granite Co.(559-661-4406) or equal. Granite shall be of standard architectural grade, free of cracks seams or starts, which may impact its structural integrity or function. Inherent variations characteristic of the quarry from which it is obtained will be acceptable. Color, texture and finish shall be within range of accepted samples.

2.1.2 Granite shall be cut to dimension in strict accordance with accepted shop drawings. Accurately reproduce curved surfaces where shown on the drawings. Maximum tolerances shall be as follows:

1) For cubic stone, thickness is to be as shown, plus or minus ¼". Face dimension to be –0", +1/8".

2) For all stone, variations from true plane on other parts of face surfaces shall not exceed 3/16" at thermal or flamed finishes and 3/64" at polished or honed finishes. Variation from the plane shall be determined by use of a 4 foot long straight edge applied in any direction on the surface.

2.1.3 Finish shall be thermal on all exposed faces.

2.2 MORTAR SETTING BED

Portland Cement: ASTM C150, Type II.

Lime: ASTM C207, Type "S" hydrated line.

Sand: ASTM C144, clean, non-staining sand, white or light grey.

Water: Fresh, clean, non-alkaline water, potable.

Acrylic latex admixture: Sika latex as manufactured by Sika Corp. (415) 487-2294, or Anchor-it by Anti- Hydro Co. (201) 242-8000, or approved equal

Setting Bed: Setting bed shall be Type "N" and consist of 1 part cement, 1 part lime, and 3 parts sand, meeting the requirements of ASTM C270 Standard Specification for Unit Masonry.

Epoxy tack coat: Sikadur 32, Hi-Mod, Moisture insensitive epoxy adhesive as manufactured by Sika Corporation, Concresive 1001 LPL epoxy adhesive as manufactured by Adhesive Engineering Company or approved equal

Evaporation Control Liquid that does not discolor the stone or harm the grout when worked into grout surface.

2.3 GROUTING MATERIALS

Mix of 1 part cement, 3 parts sand and pigment, meeting the requirements of ASTM C270 Standard Specification for Unit Masonry. Pigment to be a standard commercial brand of chemically inert coloring material. Color to match color of stone unless otherwise noted.

2.4 EXPANSION JOINTS

Premolded Joint Filler: Non-extruding and resilient filler (cork-type) conforming to ASTM D-1752 Type II with factory applied 1/2-inch deep removable top strip of suitable material

2.5 EXPANSION JOINT SEALANT

Multi component polyurethane sealant to ASTM C 920, FSTT-S-00227E, Class A, Type I or II as recommended by the manufacturer. Acceptable products include Tremco HPI, Pecora Urexpan, Vulkem 245 or approved equal. Provide color to match concrete walls, veneer, terraces, and paving throughout, unless otherwise indicated.

2.6 ANCHORING DEVICES

All anchors, clamps, dowels shall be Type 304 stainless steel or suitable non-ferrous metal of the types and sizes shown on the Drawings or as required.

2.7 PAINT FOR GRANITE – ENGRAVED LETTERS

Paint shall be a lithochrome dye. Paint application technique for granite shall be as recommended by the granite supplier. Paint color shall be as noted on plans. ***Letters to receive two coats of paint.***

2.8 DELIVERY STORAGE AND HANDLING

No materials which may cause any staining or discoloration shall be used for blocking or packing. Stack granite on timber or platforms at least 4" above the ground. Prevent staining. Prevent chipping and breakage. Replace all damaged granite at no cost to Owner.

Any piece of granite showing flaws or imperfections at the storage yard or building site shall be referred to the Engineer for determination as to responsibility and decision as to whether it shall be rejected, patched, or redressed for use.

PART 3 EXECUTION

3.1 GENERAL

Examine related work and surfaces before starting work in this section. Note conditions which require correction. Verify that corrections have been made before starting stone work. Do not proceed with work when ambient temperature is below 45° F. Ensure that materials such as curing

compounds which would prevent proper adhesion of the setting bed to the concrete are removed.

Allow concrete slab or substructure to cure for a minimum of two weeks before beginning work in this section.

3.2 SETTING STONE

Mix mortar in small batches using clean water until it is thoroughly homogeneous, stiff and plastic. Use minimum amount of water consistent with workability. Add acrylic latex admixture per manufacturer's recommendations. After mixing, set mortar for no more than 2 hours before using.

Setting: Clean all granite of ice, frost, and dirt prior to setting mortar base. Do not use wire brushes or implements which mark or damage the finish. Apply epoxy tack coat to underside of stone per manufacturer's recommendations. Carefully set each piece in a full bed of mortar. Tap home with a wood mallet to a full and solid bearing. Keep all exposed surfaces free of mortar at all times. Provide anchors wherever required to hold work in alignment and per code requirements.

Lay granite parallel to the base line where shown on the Drawings. Every course of stone shall be laid true and even and brought to finished grade shown on the Drawings. All grout joints shall be struck.

3.3 CLEANING AND PROTECTON

After all pointing has been completed, carefully clean granite work of dirt, excess mortar, stains and other defacements. Do not use acids, harsh abrasive cleaners or steel wire brushes. Point open joints and replace defective work.

Protect all completed or in process storm work at all times during construction. Do not use lumber or other materials that could stain stone.

END OF SECTION

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SECTION 02525

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SECTION 02525

COBBLES FOR POOL

PART 1 GENERAL

1.1 SUMMARY

The work specified in this section covers, but is not limited to, requirements for cobbles for the fountain/ reflecting pool bottom, including backing preparation, providing materials, installation of cobbles, finishing, cleaning, and protection. The Contractor shall furnish labor, materials, equipment, and incidentals required and perform all operations in connection with the installation of the cobbles in accordance with the lines, grades, design and dimensions shown on the drawings or otherwise established in the field by the Contracting Officer.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The latest edition available as of the date of Notice of Inviting Bids shall be used.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 144	Aggregate for Masonry Mortar
ASTM C 150	Portland Cement
ASTM C 207	Hydrated Lime for Masonry
ASTM D 1752	Performed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330; SUBMITTAL PROCEDURES:

SD-14 Samples

Three samples of each cobble type, GA.

The supplier from which the Contractor proposes to obtain materials shall be selected well in advance of the time when the materials will be required for the work. Contractor shall submit three samples for each cobble. Samples to show full range of colors. At least two of the cobbles must be engraved with text that will be provided by the Contracting Officer. Quality shall match that of material samples available for viewing during bidding as described in Section 01500, General Conditions. Contractor to submit sealant and joint mortar for selection of color and expansion joint material.

PART 2 PRODUCTS

2.1 COBBLES

Cobbles shall be smooth gray Lin Creek river washed stones 4" to 8" in diameter. Handselect cobbles: discard all blemished and broken cobbles. Final cobbles used for installation shall be of the same size and color as that of the approved samples.

2.2 MORTAR SETTING BED

2.2.1 Portland Cement: ASTM C150, Type II.

2.2.2 Lime: ASTM C207, Type "S" hydrated line.

2.2.3 Sand: ASTM C144, clean, non-staining sand, white or light grey.

2.2.4 Water: Fresh, clean, non-alkaline water, potable.

2.2.5 Acrylic latex admixture: ANSI A108.5 and A 118.4.

2.2.6 Epoxy tack coat: Hi-Mod, Moisture insensitive epoxy adhesive.

2.2.7 Evaporation Control Liquid that does not discolor the stone or harm the grout when worked into grout surface.

2.3 DELIVERY STORAGE AND HANDLING

No materials which may cause any staining or discoloration shall be used for blocking or packing. Stack cobbles on timber or platforms at least 4 inches above the ground. Prevent staining. Prevent chipping and breakage.

2.4 PAINT FOR COBBLES – ENGRAVED LETTERS

Paint shall be a lithochrome dye. Paint application technique for granite shall be as recommended by the paint supplier. Paint color shall be as noted on the plans. letters to receive two coats of paint.

PART 3 EXECUTION

3.1 GENERAL

Examine related work and surfaces before starting work in this section. Note conditions which require correction. Verify that corrections have been made before starting cobble work. Do not proceed with work when ambient temperature is below 45° F. Ensure that materials such as curing compounds which would prevent proper adhesion of the setting bed to the concrete are removed.

Allow concrete substructure to cure for a minimum of two weeks before beginning work in this section.

3.2 SETTING COBBLES

Setting bed shall consist of 1 part cement, 1 part lime to 3 parts sand. Mix in small batches using clean water until it is thoroughly homogeneous, stiff and plastic. Use minimum amount of water consistent with workability. Add acrylic latex admixture per manufacturer's recommendations. After mixing, set mortar for no more than 2 hours before using.

Setting: Clean all cobbles of ice, frost, and dirt prior to setting mortar base. Do not use wire brushes or implements which mark or damage the finish. Sandblast cobble bottom to roughen. Apply epoxy tack coat to underside of cobbles per manufacturer's recommendations. Carefully set each piece in a full bed of mortar. Tap home with a wood mallet to a full and solid bearing. Keep all exposed surfaces free of mortar at all times.

3.3 CLEANING AND PROTECTION

After all pointing has been completed, carefully clean cobbles of dirt, excess mortar, stains and other defacements. Do not use acids, harsh abrasive cleaners or steel wire brushes. Point open joints and replace defective work.

Protect all completed or in process cobble work at all times during construction. Do not use lumber or other materials that could stain cobbles.

END OF SECTION

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SECTION 03200

CONCRETE REINFORCEMENT

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SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SUMMARY

The work specified in this section includes the requirements for reinforcing steel bars for concrete, welded wire fabric, tie wire and accessories and mechanical couplings.

1.2 REFERENCES

The publications listed below form part of the specification to the extent referenced. The publications are referred to in the text by basic designation only. Where a date is given for reference standards, that edition shall be used. Where no date is given, the latest edition available on the date of Notice to Inviting Bids shall be used:

ACI INTERNATIONAL (ACI)

ACI 117	Standard Specifications for Tolerances for Concrete Construction and Materials.
ACI 318/318R	Building Code Requirements for Structural Concrete and Commentary.
ACI 315	Details and Detailing of Concrete Reinforcement.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 185	Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 615	Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 706	Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

AMERICAN WELDING SOCIETY (AWS)

AWS D1.4	(1998) Structural Welding Code - Reinforcing Steel

CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

CRSI MSP-2-01	Manual of Standard Practice
CRSI 63	Recommended Practice for Placing Reinforcing.
CRSI 65	Recommended Practice for Placing Reinforcing.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having a "FIO" designation are for information only. When used, a designation following the "GA" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Drawings

Reinforcement; GA

Submit detail drawings showing reinforcing steel placement, schedules, sizes, grades, and splicing and bending details. Drawings shall show support details including types, sizes and spacing.

SD-13 Certificates

Reinforcing Steel; GA

For each delivery and prior to the installation of reinforcing steel, submit manufacturer's certified mill test reports on each heat of reinforcing steel delivered, showing physical and chemical analysis, type and strength.

1.4 DELIVERY AND STORAGE

Reinforcement and accessories shall be stored off the ground on platforms, skids, or other supports and covered to prevent damage from water, dirt, grease or any other cause that might impair the bond with concrete.

PART 2 PRODUCTS

2.1 REINFORCING MATERIALS

2.1.1 Reinforcing Steel Bars

Deformed bars conforming to ASTM A 615, Grade 60, including supplementary requirements, or ASTM A 706 if bars are to be welded.

2.1.2 Welded Wire Fabric

Plain steel conforming to ASTM A 185.

2.1.3 Mechanical Couplers

Mechanical Couplers shall provide a minimum spliced strength in tension of 125 percent of the yield strength of the connected reinforcing bars as demonstrated by Manufacturer's tests and certification.

2.2 WIRE TIES

Wire ties shall be 16 gauge or heavier black annealed steel wire.

2.3 SUPPORTS

Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI MSP-2-01 and shall be steel or precast concrete or cement mortar blocks. Precast concrete blocks shall have wire ties and shall be not less than 4 inches square when supporting reinforcement on ground. For slabs on grade, supports shall be precast concrete blocks. Concrete or cement mortar blocks shall have the same strength and density as the concrete in the section being placed.

PART 3 EXECUTION

3.1 REINFORCEMENT

Reinforcement shall be fabricated to shapes and dimensions shown and shall conform to the requirements of ACI 318 and ACI 315. Reinforcement shall be cold bent unless otherwise authorized. Field bending of reinforcement is prohibited. Safety caps shall be placed on all exposed ends of vertical concrete reinforcement bars that pose safety hazard. Wire tie ends shall face away from the forms.

3.1.1 Placement

3.1.1.1 General

Reinforcement shall be free from loose rust and scale, dirt, oil, or other deleterious coating that could impair bond with the concrete. Reinforcement shall be placed in accordance with the Drawings, the Contractor's steel placement drawings and the CRSI "Recommended Practice for Placing Reinforcing Bars". Reinforcement shall not be continuous through Expansion Joints (EXP) and shall be as indicated on the Drawings through Construction (CJ) or Control Joints (CTJ)/Weakened Planes (WPJ). Reinforcement shall be securely tied to prevent displacement during concrete placement.

3.1.1.2 Placement Tolerance

Placement tolerance shall conform with ACI 117. If bars are moved more than three bar diameter to avoid interference with other reinforcement, conduits or embedded items, the resulting arrangement of bars, including additional bars required to meet structural requirements, shall be approved by the Contracting Officer before concrete is placed.

3.1.1.3 Minimum Concrete Cover

Minimum cover shall be as follows unless otherwise shown on the Drawings:

a. Concrete cast directly against soil 4 inches
b. Formed concrete with soil backfill. 3 inches

3.1.2 Splicing

3.1.2.1 General

Splicing of reinforcement shall conform to ACI 318. Splicing shall be by lapping***, except as otherwise specified in this Section***. Lapped bars shall be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than one-fifth the required length of lap or 6 inches.

The splice lengths shall be as indicated on the drawings but not less than 40 bar diameters (24 inches minimum).

3.1.2.2 Location

Splices at locations other than those indicated on the Drawings are subject to the concurrence of the Contracting Officer.

3.1.2.3 Mechanical Splices

Do not use mechanical splices except ***as stated herein or*** where specifically shown on the Drawings. ***Mechanical couplers may be used to splice horizontal reinforcement in the box culvert where box culvert construction under the north section of NewJulian Street crossing joins with box culvert construction under the south section of New Julian Street crossing. At this location, mechanical couplers may be placed without staggering from mechanical couplers on adjacent reinforcement bars. Installation of mechanical couplers shall be in accordance with the manufacturer's installation instructions. Maintain minimum concrete cover shown on the Drawings where mechanical couplers are used.***

3.1.2.4 Welded Splices

Perform any required welding in accordance with AWS D.14. Welders shall be qualified in accordance with AWS D1.4. Qualification test shall be performed at the worksite and the Contractor shall notify the Contracting Officer 24 hours prior to conducting tests. Special welding procedures and welders qualified by others may be accepted as permitted by AWS D1.4.

3.2 DOWEL INSTALLATION

Dowels shall be installed at locations shown on the Drawings and at right angles to joint being doweled. Dowels shall be accurately positioned and aligned parallel to the finished concrete surface before concrete placement. Dowels shall be rigidly supported during concrete placement. One end of dowels shall be coated with a bond breaker.

3.3 FIELD INSPECTION

3.3.1 General:

Notify the Contracting Officer when reinforcing steel is in place and at least 24 hours in advance of concrete placement to enable the Contracting Officer to inspect the reinforcing steel prior to placement of concrete. Concrete placed in violation of this requirement may be subject to rejection and removal at no additional cost to the Government.

The Contracting Officer's inspection will not relieve the Contractor from responsibility to conform with the Drawings and Specifications.

END OF SECTION

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SECTION 03300

CAST-IN-PLACE CONCRETE

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SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

The work specified in this section includes the requirements for concrete materials, production using an on site batch plant, placement, curing, protection, and field quality control.

1.2 REFERENCES

The publications listed below form part of the specification to the extent referenced. The publications are referred to in the text by basic designation only. Where a date is given for reference standards, that edition shall be used. Where no date is given, the latest edition available on the date of Notice to Inviting Bids shall be used:

AMERICAN CONCRETE INSTITUTE (ACI):

ACI 117	Standard Specifications for Tolerances for Structural Concrete and Materials.
ACI 211.1	Standard Practice for Selecting Proportions of Normal, Heavyweight and Mass Concrete.
ACI 301	Standard Specifications for Structural Concrete.
ACI 305R	Hot Weather Concreting.
ACI 306R	Cold Weather Concreting.
ACI 309R	Guide for Consolidation of Concrete.
ACI 318/318R	Building Code Requirements for Structural Concrete and Commentary.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):

ASTM C 29	Standard Test Method for Unit Weight and Voids in Aggregate.
ASTM C 31	Standard Practice for Making and Curing Concrete Test Specimens in the Field.
ASTM C 33	Standard Specification for Concrete Aggregates.
ASTM C 39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C 94	Standard Specification for Ready-Mixed Concrete.
ASTM C 117	Standard Test Method for Materials Finer than 75mm (No. 200) Sieve in Mineral Aggregates by Washing.

ASTM C 143 Standard Test Method for Slump of Hydraulic Cement Concrete.

ASTM C 150 Standard Specification for Portland Cement.

ASTM C 157 Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete

ASTM C 171 Standard Specification for Sheet Materials for Curing Concrete.

ASTM C 172 Standard Practice for Sampling Freshly Mixed Concrete.

ASTM C 260 Standard Specification for Air-Entraining Admixtures for Concrete.

ASTM C 289 Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method).

ASTM C 309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

ASTM C 494 Standard Specification for Chemical Admixtures for Concrete.

ASTM C 618 Coal Fly Ash and Raw or Calcinated Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.

ASTM D 638 Standard Test Method for Tensile Properties of Plastics.

ASTM D 695 Standard Test Method for Compressive Properties of Rigid Plastics

ASTM C 881 Epoxy-Resin-Base Bonding Systems for Concrete.

ASTM C 979 Standard Specification for Pigments for Integrally Colored Concrete

ASTM D 994 Preformed Expansion Joint Filler for Concrete (Bituminous Type).

ASTM D 1751 Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

ASTM D 1752 Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

ASTM D 3406 Joint Sealant, Hot Applied, Elastomeric-Type, for Portland Cement Concrete Pavements.

ASTM E 329 Standard Practice for Use in the Evaluation of Testing and Inspection Agencies as used in Construction

CORPS OF ENGINEERS (COE):

CRD-C 572 (1974) COE Specifications for Polyvinylchloride (PVC) Waterstop.

CRD-C 513 (1974) COE Specifications for Rubber Waterstops

STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION

California Test 217 Method of Test for Sand Equivalent
California Test 227 Method of Test for Evaluating Cleanness of Coarse Aggregate

AMERICAN ASSOCIATION OF STATE HIGHWAY and TRANSPORTATION OFFICIALS

AASHTO M 182 Standard Specification for Burlap Cloth Made from Jute or Kenaf

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330; SUBMITTAL DESCRIPTIONS:

SD-01 Data

Concrete Mix Designs; GA

Submit proposed concrete mix designs and supporting historical compressive strength test data for review and approval by the Contracting Officer at least 21 calendar days prior to commencement of applicable concrete placement work. Certification tests of cement, water, flyash, pozzolans, admixtures, and aggregates shall submitted with proposed mix designs to demonstrate conformance with the requirements specified herein. Certification test data for the cementitious materials and aggregates shall not be more than 90 days old.

SD-04 Drawings

Concrete Placement Drawings; GA

Submit placement drawings for all structures showing locations of construction joints, contraction joints, and control joints; lift sequence; locations of all embedded items and blockouts; and estimated volume of concrete to be placed in each lift at least 21 calendar days prior to commencement of placement work.

SD-06 Instructions

Accessory Materials – Data and installation Instructions; FIO

Submit product data and manufacturer's installation instructions for waterstops, joint materials, curing materials, bonding materials, repair materials and all other miscellaneous concrete related materials that are required or proposed.

Hot Weather and Cold Weather Placement Procedures; GA

Submit proposed procedures for curing concrete, and methods and procedures for hot weather and cold weather placement of concrete.

SD-08 Statements

Qualifications; GA,

Submit written documentation for Contractor Quality Control personnel.

SD-09 Reports

Testing and Inspection for Contractor Quality Control; GA;

Submit test reports as required by Paragraph 5.3.

SD-13 Certificates

Batch Plant Description; GA

Submit data describing in detail the equipment to be used for proportioning, mixing and controlling production of concrete on site and for transporting concrete. ***In the case of ready-mixed concrete, certification that the ready-mix plant complies with the requirements of ASTM C 94 will be acceptable.*** Manual batching of concrete will not be acceptable.

Concrete Batch Tickets; GA

Submit a batch ticket for each batch of concrete before unloading the concrete commences. The batch ticket shall contain all the information stated in Section 16 of ASTM C 94, and the following additional information:

1. Reading of the revolution counter at the first addition of aggregates to the mixer.
2. Times of day at which cement and aggregates are first intermingled, and at which water and cement are first intermingled.
3. Signature (or initials) of the ready-mix representative.
4. Amount of water added at batch plant.
5. Amount, if any, of water added at the jobsite.

Non-shrink Grout; FIO

Descriptive literature of the grout proposed for use shall be furnished together with a certificate form the manufacturer stating that it is suitable for the application or exposure for which it is being considered. Prepackaged material required only the addition of water will be accepted on the basis of certified laboratory test results showing that the material meets the requirements of CRD-C621. When fine aggregate is to be added, the Contractor shall also furnish for approval the design mix proportions together with certified copies of laboratory test results indication that the mix is in conformance with the requirements of CRD-621. Mixtures proportioned using a volume-change-controlling ingredient shall be submitted for approval. The submittal shall include the design mix proportions of all ingredients and certified copies of laboratory test results indication that the materials and the mix is in conformance with the requirements of CRD-C 621

1.4 QUALIFICATIONS

Contractor Quality Control personnel assigned to concrete construction shall be American Concrete Institute (ACI) Certified Workmen in one of the following grades or shall have written evidence of having completed similar qualification programs:

Concrete Field Testing Technician, Grade I

Concrete Laboratory Testing Technician, Grade I or II

Concrete Construction Inspector, Level II

Concrete Transportation Construction Inspector, or

Reinforced Concrete Special Inspector, Jointly certified by American Concrete Institute (ACI), Building Official and Code Administrators International (BOCA), International Conference of Building Officials (ICBO), and Southern Building Code Congress International (SBCCI).

1.5 CONCRETE MIX DESIGN

Contractor has full responsibility for the selection of the proportions of the concrete mix in order to meet the minimum 28-day compressive strength specified herein and all other concrete properties specified in this Section.

Contractor shall prepare a separate mix design in accordance with ACI 211.1 for each concrete mix to be used in the work, and shall verify adequacy of each mix design by laboratory testing in accordance with Subsection 4.2.3 of ACI 301-96.

No concrete shall be used on the work unless the Contracting Officer has approved in writing the mix design for that class of concrete.

1.6 TOLERANCES

1.6.1 Formed Surfaces

Tolerances on formed surfaces shall be as specified below:

1. Variation from the plumb: ¼-inch per 10 feet.
2. Variation from the level or grades shown on the drawings: ¼-inch per 10 feet; ½-inch per 20 feet or more.
3. Variation of linear building lines from established position in plan: ¼-inch per 10 feet; ½-inch per 20 feet or more.
4. Variation in thickness: minus ¼-inch; plus ½-inch.
5. Variation in the sizes and locations of sleeves, floor openings and wall openings, and in the thickness' of slabs and walls: Plus ½-inch and minus ¼-inch.
6. Variation in Steps

   In a flight of stairs: Riser 1/8-inch, Tread ¼-inch.

   In consecutive steps steps: Riser 1/16-inch, Tread 1/8-inch.

1.6.2 Unformed Surfaces

As specified in ACI 117 and ACI 301 for the applicable surface finish.

1.6.3 Evaluation and Acceptance

Evaluation and acceptance of concrete and concrete structures will be in accordance with ACI 301.

1.7 JOBSITE CONDITIONS

1.7.1 Hot Weather

Comply with the recommended practices of ACI 305R and the requirements specified herein. Procedures for hot weather concreting will be subject to the Contracting Officer's concurrence.

1.7.2 Cold Weather

Comply with the recommended practices of ACI 306R and the requirements specified herein. Procedures for cold weather concreting will be subject to the Contracting Officer's concurrence.

1.8 COMPLETION OF CONCRETE

For cases where loads including water are to be placed on the concrete, concrete will not be considered complete until it has reached its specified 28-day compressive strength, as demonstrated by specified test methods.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

Cement shall be ASTM C 150, Type II, low alkali portland cement or approved equivalent. Cement shall be of the same brand and type, and from the same plant of manufacture as the cement material used in the concrete represented by the submitted field data or used in trial mixtures.

2.1.1 Aggregates

2.1.1.1 General

Aggregates shall be hard, clean, uniform in quality, durable material from established off-site sources with proven record of producing concrete with minimum shrinkage. Acquire aggregate from the same approved source for all work unless otherwise approved by the Contracting Officer. Aggregates shall conform to ASTM C 33, except that the percentage of material finer than No. 200 (0.074 mm) sieve shall not exceed 3 percent measured in accordance with ASTM C 117.

2.1.1.2 Coarse Aggregates:

Cleanness value of not less than 75 when tested in accordance with California Test 227. ASTM C 33 size Number 4 (1½ in. to ¾ in.) and size Number 67 (¾ in. to No. 4).

2.1.1.3 Fine Aggregates:

Sand equivalent of not less than 75 when tested in accordance with California Test 217.

2.1.1.4 Combined Aggregates:

Exact proportions of fine aggregates and coarse aggregates to be used in the mix shall be determined by the mix design. When nominal maximum size is 1½ -inch, the percentage of size Number 4 and of size Number 467 in the coarse aggregate fraction shall be that which produces maximum density when various ratios are tested in accordance with ASTM C 29.

Aggregates shall be non-reactive to alkalis in Portland Cement when tested in accordance with ASTM C 227 or ASTM C 1260.

2.1.2 Water

Mixing water for concrete and water used to make ice shall meet the requirements of ASTM C 94 and shall be clean, fresh, and shall contain no substances deleterious to the concrete. In addition, water shall not contain more than 650 parts per million (ppm) of chlorides or more than 1,000 ppm of sulfates.

2.1.3 Admixtures

Air-entraining admixture shall conform to ASTM C 260.

Water-reducing admixture shall conform to ASTM C 494. Dosage shall be as recommended by the manufacturer. Use of calcium chloride is prohibited.

Fly ash shall conform to ASTM C 618, Class F, and supplementary chemical and physical requirements. Fly ash shall not exceed 30 percent by weight of total cementitious material (cement plus fly ash).

Use accelerating admixtures in cold weather only when approved by the Contracting Officer.

Use retarding mixtures only when approved by the Contracting Officer.

2.2 CONCRETE MIXES

2.2.1 Selection of proportions

Determine the proportions for each concrete mix in accordance with requirements of ACI 301 and the procedures in ACI 211.1 and as specified herein.

2.2.2 Strength

Provide concrete mixes exhibiting the 28-day compressive strength as indicated by the designation for the mix.

Concrete Designation	Maximum Size Aggregate	28-Day Compressive Strength (psi)
Class A	1½-inch	6,000
Class B	1½-inch	4,500
Class C	1½-inch	3,000
Class D	¾ -inch	3,000
Class E	¾ -inch	4,000
Class F	¾ -inch	4,000

2.2.3 Durability

Air Content: Additional air content is not required in any of the concrete Classes.

Water-Cement ratio W/C or Water-Cementitous materials ratio [W/(C + FA)] shall not exceed 0.48 unless approved by the Contracting Officer.

2.2.4 Consistency

Provide concrete mixes which are uniform in consistency from batch to batch. Slump shall be 4 inches at the point of discharge for concrete Classes A, B, C, D and E, and 7-inches for Class F. Determine the slump in accordance with ASTM C 143. Slump tolerance shall meet the requirements of ACI 117.

When use of a plasticizing admixture or when a Type F or G high range water reducing admixture is permitted to increase the slump of the concrete, concrete shall have a slump of 2 to 4 inches before the admixture is added and a maximum slump of 8 inches at the point of discharge after the admixture is added unless otherwise permitted.

2.2.5 Shrinkage

Concrete shall have a maximum average length change (shrinkage) of 0.04 percent when tested in accordance with ASTM C 157. Specimens shall be moist cured for the initial 7 days, then air cured and measured for length change at 7, 14, 21, and 28 days.

2.2.6 Color

All concrete designated on the plans as 50 percent "French Gray" concrete and all site furnishings pads shall contain integral C-14 50 percent French Gray "Chromix" color admixture as manufactured by L.M. Scholfield Company, (415) 255-2728, or equal. All color admixtures shall comply with ASTM C 494 and be single component pigmented water reducing concrete admixtures containing a dispersing agent. The color admixtures shall be factory formulated and packaged in cubic yard dosage increments. Multiple additives and pigments to be dosed separately into the mix will not be allowed. Color admixtures shall not contain more than 0.05 percent chloride ions. Mix admixture at rates recommended by the manufacturer to achieve the specified color.

2.2.7 Color Hardener at Plazas

The color hardener shall be formulated as a streak-free, powered, cementitious material containing hard aggregates. The aggregates must be graded through a wide particle size range and selected for hardiness and purity. It shall comply with ASTM C979. Minimum documented performance record of 15 years in similar applications. Color shall match integral color.

2.2.8 Curing and/or Sealing Materials – Colored Concrete at Plazas

Concrete sealer shall be color matched, water based curing and sealing compound that complies with ASTM C309. Application shall be in accordance with the manufacturer’s recommendations. Joint sealant shall match the color of the concrete.

2.3 ACCESSORY MATERIALS

2.3.1 Waterstops

Waterstops shall be 3/8-inch web by 6-inch length, ribbed type with centerbulb, and manufactured from Polyvinyl Chloride (PVC) in conformance with CRD-C 572 or rubber in conformance with CRD-C 513, unless indicated otherwise.

2.3.2 Contraction Joint Materials

2.3.2.1 Preformed Filler shall conform to the following standards:

Bituminous type, ASTM D 994;

Nonextruding and resilient type, ASTM D 1751; or

Sponge rubber, ASTM D 1752 Type I.

2.3.2.2 Sealant

ASTM D 3406, hot applied for horizontal joints exposed to weather.

2.3.2.3 Backup materials and bond breakers

Compatible with filler material used.

2.3.3 Curing Materials

2.3.3.1 Burlap sheet complying with AASHTO M182, Class 3 or 4.

2.3.3.2 Curing paper; polyethylene film, or polyethylene-coated burlap complying with ASTM C171.

2.3.4 Epoxy-resin bonding agent

ASTM C 881, Type V, grade and class as required by field conditions. High strength two component thixotropic epoxy bonding agent specifically formulated for bonding new concrete to old.

2.3.5 Non-Shrink Grout

Non-shrink grout shall conform to CRD-C 621. The type shall be non-metallic premixed.

PART 3 EXECUTION

3.1 CONCRETE PRODUCTION

3.1.1 Production

Concrete ~~shall be~~ ***may be readymixed or site***-batched and mixed using an on site plant provided by the Contractor. Batching and mixing shall conform to ASTM C 94 with the following modifications and additional evaluation and acceptance:

1. Retempering of concrete, i.e. remixing with or without additional cement, aggregates, water, or admixtures, will not be permitted.
2. Addition of water in excess of the amount specified in the approved mix design will not be permitted at any time, with or without additional cement and regardless of the water-

cement ratio, slump, or other characteristics which would result from such addition. Excess water is added the concrete will be rejected. Addition of any water at the jobsite will be presumed to be a violation of this provision unless the Contracting Officer's approval has been obtained for procedures to add all or part of the mixing water at the jobsite.

3. Discharge concrete into forms within 90 minutes following the first intermingling of water and cement or cement and aggregates, whichever occurs first. If the air temperature is 85 degrees F or higher, the time limit specified above shall be reduced to 60 minutes unless the Contracting Officer's approval has been obtained for means to maintain acceptable concrete quality without such time reduction.
4. Temperature of concrete at the time it is discharged shall not exceed 85 degrees F. The minimum concrete temperature shall be as specified in ACI 301.
5. Do not use concrete that has been subjected to more than 250 total revolutions of any combination of mixing and agitating equipment following the first introduction of aggregates to the mixer.
6. Mixed concrete shall be homogeneous in distribution of material and uniform in consistency and color.

3.2 CONCRETE PLACEMENT

3.2.1 Preparation

1. All surfaces of foundations upon or against which concrete is to be placed shall be clean and free from standing water, mud and debris, oil, objectionable coatings, and loose, semidetached, or unsound fragments. All foundations shall be free from frost or ice when concrete is placed upon or against them. Moisten surfaces of foundations thoroughly so that moisture will not be drawn from the freshly placed concrete.
2. Do not place concrete until all formwork, reinforcing steel, installation of parts to be embedded, and preparation of surfaces involving placement have been concurred to by the Contracting Officer. Do not place concrete in water. Method of depositing the concrete shall be subject to the Contracting Officer's approval. Neither place concrete in running water, nor subject concrete to the action of running water until after the concrete has hardened.
3. Clean all surfaces of forms and embedded materials of all mortar or grout before placing the surrounding or adjacent concrete.

3.2.2 Consolidation

Consolidate concrete in accordance with recommendations in ACI 309R. Consolidate all concrete, except slabs four inches thick or less, by means of high frequency, internal, mechanical vibrating equipment supplemented by hand spading and tamping. Consolidate slabs four inches thick or less by means of vibrating screeds or, for small areas such as curbs, wood tampers. Do not vibrate forms or reinforcement. Cease consolidation when the concrete has been compacted thoroughly and ceases to decrease in volume.

3.2.3. Construction Joints (CJ)

Construction joints are joints that are placed in concrete to facilitate the placement of concrete and to allow for the scheduled or unscheduled interruption to the placement operations. The concrete surface at the point of stoppage becomes a construction joint when the concrete placement continues. Full bond is required across all construction joints unless the joint coincides with an expansion or contraction joint. Construction joints shall be submitted on placement drawings and are subject to the Contracting Officers approval.

1. Locate construction joints not shown on the drawings so as to least impair the strength of the structure and show on the placement drawings. Location of all construction joints shall be subject to the concurrence of the Contracting Officer. Locate horizontal joints in walls at the tops of footings or grade slabs. Place haunches at the same time as slabs.
2. Prepare construction joint surface for bonding by sand blasting and thoroughly cleaning, brushing the surface, and removing all laitance to expose coarse aggregate uniformly, free of laitance, loose aggregate, or damaged concrete.
3. Bond construction joints by one of the following methods:
    a. Specified epoxy-resin adhesive; or
    b. Bonding agent specified; or
    c. Brush the surface with neat cement grout with a stiff brush. Work the grout into complete contact with the surface before placing fresh concrete.

3.2.4 Expansion Joints (EXP or EJ)

Expansion joints are joints placed in concrete to minimize the compression forces transmitted by abutting concrete caused by expansion of the concrete or structure. Expansion joints are designed to isolate structural elements from each other. The joints shall be the full depths of the element and of the widths shown on the Drawings. Preformed Joint Filler material shall conform to the requirements in Part 2.

3.2.5 Control Joints (CTJ) or Weakened Plane Joint (WPJ)

Control joints are joints placed in concrete to regulate the cracking that occurs from the contraction or volumetric shrinkage of concrete. Contraction joints may be made by forming the joint with a strip of wood, plastic or metal, or after construction by saw cutting the joint. Regardless of method used to produce the weakened plane, it shall be 1/4 the depth of the slab thickness and between 1/8 and 3/16 inch wide. For saw-cut joints, cutting shall be timed properly with the set of the concrete. Cutting shall be started as soon as the concrete has hardened sufficiently to prevent raveling of the edges of the saw cut. Cutting shall be completed before shrinkage stresses become sufficient to produce cracking.

3.3 SURFACE FINISHES

3.3.1 Formed Concrete Finishes

Produce finishes on formed surfaces in accordance with ACI 117 and ACI 301 at locations as follows:

3.3.1.1 Rough Form Finish

All exterior surfaces of structures that are below grade and will not be exposed.

3.3.1.2 Smooth Form Finish

All exposed exterior surfaces and all interior surfaces of structures, except where indicated otherwise on the Drawings. The four classes of formed finish required by the Contract are defined in Table 3.4 and Section 3.4 of ACI 347R. Formed surfaces shall be Class B unless otherwise shown on the Drawings.

3.3.1.3 Textured Finish

A textured finish will be placed on exterior surfaces exposed to view as indicated on the Drawings. Refer to form liner details in the Drawings.

3.3.2 Unformed Concrete Finishes

No finishing is required beyond screeding on unformed surfaces to be covered by fill material. Produce finishes on other unformed surfaces in accordance with ACI 301R at locations as follows:

1. Trowelled Finish: All second stage concrete, and all slabs not specified to receive nonslip finish.
2. Broomed Finish: Exterior surfaces that will experience foot traffic. Direction to be transverse to the slope.
3. Floated Finish: On all other surfaces.

3.3.3 Slope

Slope all surfaces that will be exposed to weather and normally level for drainage. Unless other slopes or level surfaces are shown on the drawings, surfaces shall be sloped 1/8-inch per foot.

3.3.4 Repair of Surface Defects

Repair tie holes and surface defects immediately after form removal.

1. Repair in accordance with ACI 301.
2. After correction of surface defects, remove all fins and corrections and rub all patched surfaces to obtain the same color as surrounding concrete.

3.4 CURING AND PROTECTION

Cure unformed concrete surfaces immediately, and formed surfaces immediately following removal of forms. Protect concrete during curing period from excessively hot or cold temperatures and mechanical injury.

Concrete shall be cured using by one of methods “a.” through “d.” described in ACI 301-96, Paragraph 5.3.6.4.

Cure concrete for a minimum of 7 days.

3.5 TESTING AND INSPECTION FOR CONTRACTOR QUALITY CONTROL

3.5.1 General

The Contractor shall perform the inspection and tests described below and, based upon the results of these inspections and tests, shall take the action required. Testing for acceptance shall be performed by an independent commercial testing laboratory subject to approval by the Contracting Officer in accordance with Section 01451; CONTRACTOR QUALITY CONTROL. All results of tests or inspections conducted shall be reported informally as they are completed and in writing daily. A weekly report shall be prepared covering the entire period from the start of the construction season through the current week. During periods of cold-weather protection, reports of pertinent temperatures shall be made daily. These requirements do not relieve the Contractor of the obligation to report certain failures immediately as required in preceding paragraphs. Such reports of failures and the action taken shall be confirmed in writing in the routine reports. The Contracting Officer has the right to examine all contractor quality control records

3.5.2 Compressive Strength

Test cylinders shall be molded and cured in accordance with ASTM C 31 and shall be tested in accordance with ASTM C 39. Compressive strength test results will be evaluated in accordance with ACI 301.

1. Compressive strength tests shall be performed for each 500 cubic yards, or fraction thereof, of each concrete mix placed in any one day, but in any event at least one set of compression test cylinders shall be made to represent each lift of concrete placed.
2. A set of cylinders shall consist of six cylinders: Two for testing at seven days, two for testing at twenty-eight days, and two for spares.

3.5.3 Slump and air content

Slump and air content tests shall be performed whenever compression test cylinders are made, and at other times as often as is necessary to control the quality of the concrete. Temperature shall be measured whenever compression test cylinders are made, and in hot or cold weather at frequent intervals until satisfactory control is established.

3.5.4 Shrinkage

Shrinkage tests shall be performed for each 2,000 cubic yards of each concrete mix class placed, and at other times as often as is necessary to control the quality of the concrete.

3.5.5 Composite Samples

Composite samples for testing shall be furnished in accordance with ASTM C 172. Furnish samples from batches of concrete selected by the Contracting Officer.

3.5.6 Storage

Furnish and maintain storage boxes for curing concrete test cylinders within the temperature range of 60 to 80 degrees F. Provide each box with a hasp to permit padlocking and a minimum-maximum registering thermometer.

3.5.7 Additional test cylinders

Additional test cylinders for determining the strength of concrete in place before 28 days may be made, but the molding, curing, and testing of these additional cylinders shall be at the Contractor's expense.

END OF SECTION